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Table of Contents.

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ORIGINAL ARTICLES— Page.

The Combined Use of Chlorpromazine and Reserpine in the Treatment of Chronic Mental Illness: A Preliminary Report, by David R. Morgan, M.B., B.S., D.P.M. .. 77

Chlorpromazine, by K. Andermann and J. S. B. Lindsay .. 80

A Clinical Evaluation of Reserpine in the Treatment of Chronic Mental Patients, by Herbert M. Bower .. 82

Rho (D^u) Variants in Blood Detected only by the Coombs Antiglobulin Test, and Their Significance, by R. T. Simmons and J. A. Albrey .. 87

The Diagnostic Value of Protein-Bound Iodine and Forty-Eight Hour Protein-Bound I^{131} as Indices of Thyroid Disorders, by K. H. Clarke, M.Sc., A.R.C.S., A.Inst.P., Edna V. Sherriff, M.Sc., A.Inst.P., and Dora Winikoff, M.Sc. .. 89

Comparison of the Sensitiveness and Consistency of Certain Blood Tests for Persons Exposed to Minor Degrees of Ionizing Radiation, by D. O. Shiels .. 91

REPORTS OF CASES—

Ischæmic Episodes in Cardiac Failure: Acute Arterial Insufficiency with and without Structural Blockage, by M. Hamilton, A. J. Barnett and T. E. Lowe .. 93

REVIEWS—

Demonstrations of Operative Surgery .. 96

The Management of Mental Deficiency in Children 96

Clinical Endocrinology .. 97

Growth and Development of Children .. 97

Fundamentals of Otolaryngology .. 97

Fluid Therapy .. 97

NOTES ON BOOKS, CURRENT JOURNALS AND NEW APPLIANCES—

World Distribution of Leishmaniasis .. 98

BOOKS RECEIVED .. 98

LEADING ARTICLES—

Chlorpromazine, Reserpine and Chronic Mental Illness .. 99

CURRENT COMMENT— Page.

Surgical Preparedness for Catastrophe .. 101

Body Armour .. 102

Treatment of Hæmorrhagic Shock .. 102

Some Collateral Benefits of Rauwolfia .. 103

Tetanus Prophylaxis .. 103

Threadworms .. 103

Snakebite Remedies .. 103

ABSTRACTS FROM MEDICAL LITERATURE—

Dermatology .. 104

Urology .. 105

CONGRESS NOTES—

Australasian Medical Congress (British Medical Association) .. 106

CORRESPONDENCE—

The Genetic Price of Radiation .. 110

The Closing of Trudeau Sanatorium .. 110

Perforation of the Small Bowel in Intestinal Obstruction .. 111

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA .. 111

...CE—

...he Urological Society of Australasia .. 111

UNIVERSITY INTELLIGENCE—

The University of Adelaide .. 111

ROYAL AUSTRALASIAN COLLEGE OF SURGEONS—

The Edward Lumley Surgical Research Fellowship Fund .. 112

POST-GRADUATE WORK—

The Post-Graduate Committee in Medicine in the University of Sydney .. 112

MEDICAL APPOINTMENTS .. 112

DEATHS .. 112

DIARY FOR THE MONTH .. 112

MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 112

EDITORIAL NOTICES .. 112

THE COMBINED USE OF CHLORPROMAZINE AND RESERPINE IN THE TREATMENT OF CHRONIC MENTAL ILLNESS: A PRELIMINARY REPORT.

By DAVID R. MORGAN, M.B., B.S., D.P.M.,
Mental Hospital, Parramatta, New South Wales.

DURING the last fifty years many new treatments have been discovered which have brought benefit to the mentally ill, and with each new discovery the once bleak outlook for mental illness has become increasingly favourable. Shock treatment, insulin coma therapy and leucotomy have all been hailed as great strides forward, and without them many useful citizens would probably still be chronic mental invalids. New treatments, it seems, are always tried first on those who have recently become ill, and always in the admission wards, where the facilities are the best available in the hospital. Yet in spite of these advances in psychiatric therapy there has always been the vast residue of patients "who have not responded to treatment", graded in each hospital according to their tendencies, and herded into "chronic" wards which are called "good", "semi-refractory", and "refractory".

Shock treatment and insulin therapy have touched the fringe of these wards, and many patients have been partially or wholly rehabilitated and others have been improved sufficiently no longer to need restraint and seclusion, and to lead semi-useful lives within the walls of the hospital. However, there are still many chronically insane patients who are violent, destructive, filthy and depraved, and who, for their own protection and for the protection of the other patients and the nursing staff, require restraint and seclusion; their care constitutes a tremendous nursing and economic problem. In Australia, where mental hospitals have always occupied a position of secondary importance in the eyes of the community, the nursing of these patients has involved a continual, hopeless, heart-breaking struggle on the part of the grossly overworked nursing staff. In fact, it is because of the trials and difficulties of nursing in these refractory wards that many young women in the past have given up mental nursing as a career.

In mental hospitals overseas many of these demented and violent patients have been regarded as patients for whom the only therapy available would be leucotomy, with the idea that even if they were not rehabilitated to society, at least they would become more tractable and easily managed. Therefore it is most stimulating and encouraging to find a new method of treatment which has in a few short weeks transformed the "chronic" wards of the Mental Hospital, Parramatta, in a manner which even yet the nursing staff cannot believe is really true. Naturally the nurses were very cautious at first, as so often before treatments had been tried and had failed; but when the

object of the new drugs was explained they willingly and whole-heartedly cooperated, and without their enthusiastic support the following results could not have been achieved.

In this hospital chlorpromazine ("Largactil") was first used by Dr. J. L. Evans about a year ago for recently admitted patients who were acutely emotionally disturbed, especially those with manic states, with very encouraging and satisfactory results, many of the patients undergoing a remission to their pre-psychotic personalities without the use of electric shock treatment. I had first read of the use of reserpine ("Serpasil") in psychiatry in 1954, but it was of necessity virtually untried, as shortage of staff precluded its use. However, in *Time* of March 7, 1955, I read an article describing the combined use of "Largactil" and "Serpasil" in American State hospitals, and the spectacular results obtained, especially in the chronically disturbed patients in the "back wards". I determined to try to duplicate the results in this hospital, and I am delighted to state that the results have far exceeded my most sanguine expectations. The results have been so encouraging that I have been prompted to give this preliminary report before any lengthy statistical evaluation of the benefits of this treatment can be tabulated. When I explained to the medical representative of the Ciba Medical Department what I proposed to do, I received his whole-hearted cooperation, including a generous trial supply of the drug "Serpasil", sufficient to treat 12 patients for a month. There is a splendid review of reserpine ("Serpasil", Ciba) in the *Annals of the New York Academy of Sciences* (1954), and a preliminary report of its use in the management of the mentally ill and mentally retarded is presented by Noce *et alii* (1954). In this latter article the conditions at the Modesto State Hospital, California, before and after the use of this drug closely parallel my own experience.

I decided that if "Serpasil" was to prove of benefit, then the patients selected should be the very worst in the hospital from the point of view of behaviour, and if they showed even some improvement, then equally good results could be anticipated in less chronically ill patients. The patients chosen were all considered to have an absolutely hopeless prognosis. Although five male patients have been treated with "Serpasil" and have all shown great improvement, they are not included here owing to my inability to supervise them adequately, for during the month when this treatment was initiated there were the Medical Superintendent, myself and one other medical officer to care for 1680 patients in this "acute" admitting hospital with an admission rate of 450 patients per year.

Within three weeks of the commencement of treatment with "Serpasil" and "Largactil" the results were already so good that the number of patients receiving treatment was rapidly expanded, the limiting factor being the ability of the nurses to find the time amid their other duties to administer the treatment; but as the wards became quieter more patients were placed on the treatment, and this continues. Patients were selected for "Serpasil" therapy if they were mute, inaccessible, faulty, delusional and tormented by their hallucinations, whilst "Largactil" has been used mainly for patients who showed violent, homicidal, impulsive, restless and aggressive behaviour, or who were extremely tense, or for elderly, senile, agitated patients who wandered aimlessly about the ward, with the constant risk of falling and injuring themselves.

Condition of the Wards Before Treatment.

The wards prior to the institution of this treatment were typical of such refractory wards—overcrowded and congested, with eight to twelve patients in each of four wards, tied in a camisole by day. These patients were quietened by paraldehyde and barbiturate sedation when necessary, and many were on maintenance electro-convulsive therapy twice a week. Each morning the nurses had the task of bathing and dressing violently assaultive and resistant patients, then spoon-feeding them separately because of their violent, aggressive and resistive behaviour. At night many patients were faulty and destructive, fights between women were common in the wards, and there was nearly always some patient shouting or screaming. Thirty to forty draughts of paraldehyde were given each night in addition to other sedatives, almost as a matter of routine. As can be seen, the burden on the nursing staff was very great indeed.

Dosage and Side Effects.

When I began the treatment towards the end of March, 1955, I had difficulty in deciding on an appropriate dosage, for as yet there is no real standard. No doubt with the passage of time experience will modify the levels of dosage I have used. Reserpine ("Serpasil") is supplied in tablets of 0·25 milligramme and 1·0 milligramme ampoules in two cubic centimetres for intramuscular injection, and I have started patients as a rule on injections and/or tablets morning and evening, so that each patient received initially a dose of five milligrammes of "Serpasil" daily for one week, and then this dosage was lowered to four milligrammes and then three milligrammes per week or less, depending on the individual response. However, in several cases the "Serpasil" had to be increased to a total of six to eight milligrammes daily before a satisfactory response was gained. Several patients who showed no favourable response to "Serpasil" at the end of four weeks have since been given "Largactil", mainly with good results. With "Serpasil" the only side effects so far noted have been an initial drowsiness in nearly all patients, which wears off in seven to fourteen days, and an initial flushing of the skin, but no nasal stuffiness, looseness of stools, or hypotensive effects as have been described by some authors. Nearly all patients have shown a great increase in appetite, and one patient not previously considered to be an epileptic has had three epileptic seizures, now controlled with "Dilantin". Chlorpromazine ("Largactil") is supplied in tablets of 25 milligrammes and ampoules of 50 milligrammes, and has been used in doses somewhat in excess of those recommended overseas. This drug has been given three times a day to a total of up to 600 milligrammes a day in some cases, but as a general rule six tablets three times a day have been the commencing level (450 milligrammes per day), and as soon as a tranquillizing effect is apparent, then the dosage is reduced to three or two tablets three times a day, which has proved to be an average maintenance dose. "Largactil" given intramuscularly seems to exert a more rapid and pronounced effect, and two ampoules three times a day (300 milligrammes) have proved an adequate daily commencing dose; the patients are given tablets as soon as they are sufficiently cooperative to take them. Except in the treatment of elderly or thin patients, it has not been found necessary to dilute the drug with sterile normal saline or water. The only side effect I have observed with "Largactil" has been that two patients developed a pink, œdematous swelling on portions of the body exposed to sunlight; but when the patients were kept in the shade the swelling subsided without the necessity of discontinuing the drug. Among the 81 patients so far treated by "Largactil" there has not been one case of jaundice.

To date no alarming reaction has occurred necessitating the discontinuance of either "Serpasil" or "Largactil" therapy.

Results of Treatment.

The results have been dramatic and spectacular. In general the whole attitude of the patients and staff has improved beyond all recognition. Camisole restraint has been virtually abolished; patients who, in the memory of the present nurses, have never been able to eat in the ward dining room now eat with the other patients, they are more sociable, and although many still appear to retain their delusions and hallucinations, they do not appear to be worried or compelled to impulsive behaviour by them. In all the wards the patients are happier and more friendly to one another.

The following histories of some of my worst patients chosen at random are typical of the improvement shown by many who have been treated with "Largactil" and "Serpasil".

A., aged fifty-three years, was first admitted to the Mental Hospital, Kenmore, in 1933. Her hereditary background included her father, who died in the Mental Hospital, Callan Park, and a maternal aunt who was in the Mental Hospital, Gladesville. From 1934 to 1937 the patient was confused, incoherent, rambling, picking her face and screaming for no apparent reason, and at times so resistive that she required tube feeding. Frequently her behaviour necessitated camisole restraint and seclusion in a single room.

She was transferred to the Mental Hospital, Parramatta, in 1937, and has been here ever since, her behaviour being as described above. At night she slept in a single room on canvas rugs because of her destructiveness, and her personal habits were depraved. Each morning it took the combined efforts of three nurses to wash her and place her in a camisole so that she could be outside in the ward airing court. She had to be spoon-fed, and was always completely inaccessible, violent and resistive, and kicked fiercely at anyone who came near her. It was impossible even to keep a pair of shoes on her feet.

Since she has been receiving "Serpasil" her behaviour has undergone an unbelievable transformation. For the first time in eighteen years she now sleeps in an ordinary bed with sheets and blankets, and her habits are clean. She still requires assistance to dress, but is no longer violent or resistive. She wears ordinary clothes, shoes and stockings, does not require restraint at all, and can take her meals with the other patients with a splendid appetite. She now talks freely, her ideas being mainly religious confused wanderings; but she can give sensible answers about her bodily needs and is friendly and cooperative.

B., aged thirty-nine years, was admitted to this hospital in 1951, having been here three years previously, and in the Mental Hospital, Gladesville, in 1949, where she had electroconvulsive therapy; from that hospital she had been removed against medical advice. She was always extremely violent, resistive, abusive and unreliable. In 1952 she received electroconvulsive therapy and improved to the extent of being permitted on leave to her husband's care. She became pregnant and was returned here from the maternity hospital. Her husband then insisted that she should have no further electroconvulsive therapy, as she had had a number of epileptic seizures after this treatment. Since then her mental condition has gradually deteriorated, and she was regarded as one of our most unreliable, treacherous and impulsively homicidal female patients. She was kept continuously in a separate part of the building, and the nurses were forbidden to go near her alone. In the early part of this year she made at least five sudden vicious, unprovoked, desperately homicidal attacks on the staff. She has been treated with "Largactil", and has had no fits for four months. She now mixes freely with the other patients, and is cheerful, cooperative and helpful. She attends outdoor recreations and the hospital dances and pictures, and also occupational therapy. The question of leave will arise in the near future.

C., aged forty-eight years, was admitted to this hospital in 1935, and had been regarded as in the terminal dementia of schizophrenia. Since 1936 she has been always described as incoherent, depraved, demented and impulsively violent. For years she slept in a single room by night and was always in a camisole by day. She was most resistive to attention, biting and kicking the nurses, with outbursts of prolonged screaming. Since receiving "Serpasil" she has become friendly, quiet and cooperative, and smiles and speaks in a sweet childish manner. She is dressed in ordinary clothing, wears make-up, eats with the other patients, and has attended the hospital pictures with the other patients.

D., aged thirty-eight years, was admitted to this hospital in 1950. She had been diagnosed as a schizophrenic, and her prognosis was regarded as hopeless. Since 1951 she had been in a refractory ward because of her violent and impulsive behaviour, and she had the habit of suddenly scratching other patients for no obvious reason. Since being treated with "Largactil" she has been friendly and pleasant, and now every time I enter the ward she comes up to me and tells me how much better she feels—and, of course, she now gives no trouble at all to the nursing staff.

E., aged fifty-nine years, was first admitted to a mental hospital in 1931, and was transferred to the Mental Hospital, Parramatta, in 1947. She had been described previously as being extremely hallucinated and delusional, and had had electroconvulsive therapy without benefit. Always in hospital she had been impulsive and volent, kicking with fiendish violence at anyone foolish enough to come near her. She was very destructive to clothing, and would seize my clothes with tremendous vigour and endeavour to tear them to shreds if I approached her. Each day it took the combined efforts of the nurses to take her from her room out to the open air. Since receiving "Serpasil" therapy she is a changed person. She is still very delusional, but is now dressed in proper clothing, wears a hat and make-up, and for the first time in the memory of the nursing staff has been able to leave the ward. She is no trouble to care for, attends the hospital recreations, and takes a very keen interest in all that happens around her.

F., aged fifty-three years, was admitted to this hospital in 1934, and since 1938 has been idle, inaccessible, destructive, and faulty and depraved in her habits. Since the administration of "Serpasil" she no longer is in any form of restraint; she is no longer violent or destructive, but helps the nurses in the ward, dresses in her own clothes, and has asked whether she may go to occupational therapy—a truly remarkable transformation in her behaviour.

Many other patients who have never previously dressed themselves are now able to do so, and others who were formerly tormented by their delusions and hallucinations now either are not obviously affected by them or, if they are, no longer appear distressed.

At night, in place of the previous noise and night draughts, the wards are quiet and peaceful—perhaps at the most four to six night draughts are used in place of the former 40. There are now less than five patients in camisole restraint each day, compared with 30 to 40 previously.

Patients for electro-convulsive therapy are now reduced to 10 to 11 on treatment days, in place of the previous 30 to 40. The patients much prefer taking the tablets to having electro-convulsive therapy, for which many show an intense fear reaction. The amount of linen and clothing destroyed by destructive patients has been reduced, and less soiled linen has to be dealt with in the hospital laundry.

The members of the nursing staff have rejoiced at the improvement, and are now delighted that they have a positive constructive role to play as therapists in the rehabilitation of their patients. They feel that they are nurses in the proper sense of the word, and as one remarked the other day: "This is not like coming on duty, but like going visiting for the day." They are optimistic and enthusiastic, their only fear being that by some mischance the treatment may be discontinued, and several have said that if the wards ever reverted to their former state they would resign.

How long will the treatment have to continue, and what will be the ultimate maintenance levels? Or will the drugs finally be able to be discontinued completely? These are questions which as yet I cannot answer.

At the end of April, in the chronic refractory wards of the female division of this hospital I had 22 patients receiving "Serpasil" and 81 patients receiving "Largactil", and this number does not include the patients treated in the admission wards, who, of course, come under a different category. However, in passing I may add that their response to treatment with chlorpromazine and reserpine has also been most gratifying.

Of the 22 patients receiving "Serpasil", four were not improved, five were improved, and 13 were greatly improved. Of the 81 patients receiving "Largactil", six were not improved, 41 were improved, and 34 were greatly improved. "Greatly improved" means that formerly violent, aggressive, inaccessible, dangerous patients, who required either constant supervision or camisole restraint, are now able to dress themselves, eat in the ward dining room with the other patients, and take an interest in the community activities of the ward. "Improved" means that the patients are quieter and more pleasant and cooperative, but that they still occasionally show aggressive or resistive behaviour, and the members of the nursing staff feel that they cannot as yet be completely trusted.

Comment.

It is interesting to note that "Serpasil" diminishes the severity and realistic quality of the hallucinations which so often distress patients, and that it contains an indole ring with a long side chain, and that other compounds,

such as lysergic acid, harmine and adrenochrome, called "hallucinogens" by Hoffer, Osmond and Smythies (1954), all contain an indole ring and produce acute hallucinations when administered to normal people.

On the other hand, many other organic compounds containing an indole ring also occur in the human body, and neither elicit nor diminish hallucinations, so that evidently the indole ring in "Serpasil" is interesting but not significant.

Conclusion.

It may seem that the claims in this article concerning the improvement of patients are exaggerated; I am happy to say that they are not. Obviously this treatment by itself cannot rehabilitate to community life patients who have a gap in their lives perhaps of many years, during which they have been completely inaccessible and divorced from their environment. Such patients will require intense psychotherapy, occupational therapy and a planned programme of rehabilitation and reeducation. At this moment we stand on the threshold of a new era in the treatment of mental illness, in which not only may acute illness be treated more rapidly and successfully, but many patients, previously regarded as hopelessly incurable, may be returned to the bosom of their families to lead a useful and constructive life in the community.

I now see each day patients who are accessible to psychotherapy for the first time in the course of their illness, and who are denied this chance of a new life because of the shortage of trained psychiatrists. A new hope is dawning for the chronically mentally ill such as has never before existed, and every citizen should be made aware of this new responsibility towards these helpless and mostly forgotten people. This is a golden opportunity to be seized and implemented by every means in our power, so that light can shine where before there was only desolation and darkness of the spirit.

Summary.

A new method of treating the chronically mentally ill with large doses of chlorpromazine ("Largactil") and reserpine ("Serpasil") has been described. Eighty-one female patients have received "Largactil" and 22 female patients have received "Serpasil", with great improvement in the main. Some individual improvements have been cited, and attention has been drawn to the raised morale of the patients and to the positive and enthusiastic attitude of the nursing staff, whose burden has been immeasurably lightened. Finally, it has been pointed out that this new treatment has brought with it many new responsibilities which we as citizens cannot ignore.

Acknowledgements.

This paper is published with the permission of the Inspector-General of Mental Hospitals of New South Wales, Dr. Donald S. Fraser. I also wish to express my thanks to the matron, charge nurses and nursing staff of the Mental Hospital, Parramatta, whose enthusiastic cooperation has made the changes outlined above possible. Finally, I wish sincerely to acknowledge the inspiration and encouragement which I have received from Dr. Eric T. Hilliard, Medical Superintendent of the Mental Hospital, Parramatta.

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CHLORPROMAZINE.

By K. ANDERMANN AND J. S. B. LINDSAY,
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THERE is a growing interest in the use of chlorpromazine (3 chloro-10-(3'-dimethylaminopropyl)-phenothiazine ("Largactil") in psychiatric practice. Many observers have noted benefit in a variety of clinical conditions (Sigwald and Bouttier, Arnold *et alii*, Lehmann and Hanrahan, Anton-Stephens, Elkes and Elkes). All agree that the drug does reduce the "turbulence" of chronic psychotics, and is useful in the symptomatic control of almost any type of severe excitement.

In this paper we wish to report upon a controlled experiment with chlorpromazine in the treatment of chronic psychotic patients, with particular reference to symptomatic benefit in chronic schizophrenic patients in institutions. A few other observations were made on other patients, and these are briefly mentioned.

Controlled Series.

Forty female chronic schizophrenic patients were selected. From these, two groups each of 10 were selected, matched as exactly as possible for age (43·5 and 42·9 years) and for duration of illness (20·7 and 21·0 years). The remaining 20 constituted a third group.

In the first group of 10 patients each was given 300 milligrammes of chlorpromazine a day by mouth for the six-week test period. Two patients had their daily dose increased to 375 milligrammes after three weeks.

The second group of 10 were given a placebo orally. The routine of administration for both these groups was made as simple as possible. From the start of the test period the group of 20 patients were forgotten.

Checking and Scoring

For a period of four weeks before the test, all 40 patients were checked and scored for a variety of symptoms with particular reference to "turbulence" as a nursing problem. These unpleasant "turbulent" symptoms were scored under the following headings on a simple three-point scale (0, 1, 2): dress, table manners, motor activity, verbal behaviour and toilet (day and night). At this time the patients were placed in rank order of "turbulent" behaviour for the four following headings: dress, table manners, motor activity and verbal behaviour. When these rank orders were checked against the scores for "turbulence" there was a high degree of agreement.

During the period of the test, weekly assessments were made of changes for both 10-patient groups in an identical manner. In addition some items such as toilet habits were recorded daily.

At the end of the six-week period the two groups were again scored separately in the same manner as the pre-test scoring. Then these scores were checked against the weekly and daily reports of symptomatic change. The occasional discrepancy was settled by scoring a mean—for example, 1·5 instead of 1 or 2.

The chlorpromazine therapy was continued at the end of the six-week period, but the dosage was put on a more individual basis. The administration of the placebo was also continued in view of the benefit derived therefrom.

Four weeks later the "forgotten" group of 20 were reviewed. Various intercurrent exigencies and treatment

needs had arisen in nine of the 20. Ten of the remaining 11 patients were checked and rescored. Those selected had certainly received no especial notice or attention during the ten weeks.

Results.

The results are set out in Table I.

TABLE I.

Category.	Score.		Probability (χ^2).
	Placebo.	Chlorpromazine.	
Dress:			
Before	5	13	—
After	2	2	—
Table manners:			
Before	15	44	<0·001
After	8	9	—
Motor activity:			
Before	29	44	<0·001
After	26	15	—
Talk:			
Before	4	11	—
After	2	1	—
Toilet (day):			
Before	18	13	<0·01
After	13	6	>0·001
Toilet (night):			
Before	21·5	48	—
After	18	20	<0·001

In each group of symptoms chlorpromazine proved superior to a placebo. There was no significant difference in body weight between the chlorpromazine group and the control group (gains of 3·8 and 4·3 pounds respectively).

The control series of 10 patients showed improvement in all symptom groupings. When the figures were tested statistically against the hypothetical values for no change, dress and table manners were significant. The total improvement in the placebo group is significant at the 5% level. The reduction in symptomatic "turbulence" with chlorpromazine is highly significant.

If the score after six weeks is expressed as a percentage of the pre-test score for each patient, the placebo group shows figures which all lie between 60% and 80%. The percentage turbulence remaining is relatively constant. With chlorpromazine the figures ranged from 75% to less than 10%. Three patients were in this less than 10% range and their "turbulence" was reduced to near zero. All three were formally diagnosed as chronic catatonic schizophrenics. Further study is necessary to try to determine if there are clinical or descriptive groups of patients who are benefited by chlorpromazine in a selective manner.

The score of the "forgotten" group after ten weeks was also expressed as a percentage of the pre-test score. The percentage turbulence remaining for seven patients was between 79% and 90%, two patients were unchanged at 100% and one was worse, scoring 112%. The total improvement in the entirely untreated group is significant only at the 10% level. It is clear that a much larger initial patient selection is necessary to give figures significant at the 5% level.

Discussion.

The results indicate that the difficulties in nursing chronic psychotic patients can be definitely relieved by the exhibition of chlorpromazine. The improvement is significantly better than that produced by a placebo, but does not occur equally in all those who receive chlorpromazine. Improvement also may follow the administration of a placebo, but here the improvement seems to be more uniform.

The improvement in such a placebo group is often attributed to the increased attention and nursing care which are necessitated by the regular administration of some treatment and the demands of improved observation and recording. This explanation overlooks the question of interpatient relationships. If in a given patient community the most turbulent and disturbed are quietened down, one would expect a general sedative effect. A somewhat similar result might be expected to follow the transfer of the "turbulent" to another ward.

The "forgotten" group was used in an attempt to evaluate this general sedative effect. In view of the fact that the significance is only at the 10% level, the results can only be considered suggestive, warranting further investigation. The placebo group seemed to do better than the entirely untreated group, but the difference between them again is not significant.

The common agreement in the published literature about the beneficial effect of chlorpromazine in states of over-activity led us to try the drug in a variety of other states of excitement or over-activity. With the various states of over-activity associated with mental deficiency, and in those states of over-activity associated with epilepsy, we did not gain the impression of any sustained improvement.

Some improvement was quite obvious in many, but not all, cases of confusion, restlessness and agitation occurring in the senium.

A man, aged seventy-three years, was admitted to hospital in October, 1953. He was then abusive, impulsive, restless and over-active, with some defect of memory and orientation. He showed some improvement with other treatment, but there was no sustained benefit until chlorpromazine was administered. He has now been quiet, sociable and friendly for five months; the chlorpromazine therapy is still being continued, but the dose has been reduced from 225 to 75 milligrammes per day.

Improvement was pronounced in some patients with paranoid reactions, all of whom had well-preserved personalities, but whose interpersonal relationships were disturbed by psychotic beliefs.

One woman, aged thirty-nine years, had had various treatments for four years in various hospitals before her admission to a mental hospital in January, 1953. She received further courses of insulin and electroconvulsive therapy, but without benefit. Her ideas of reference and "electric thoughts" prevented her from forming normal interpersonal relationships. After the administration of 250 milligrammes of chlorpromazine a day she became friendly and sociable and is now sufficiently well to be in a "self-management" cottage.

Our experience with chlorpromazine alone in other forms of over-activity is limited to one or two cases. Only one patient with mania has been controlled by chlorpromazine alone; in other cases chlorpromazine and other sedatives appeared to be successful. One post-encephalitic patient has shown diminution in her psychomotor over-activity on a dose of 150 milligrammes per day. Chlorpromazine has been combined with electroconvulsive therapy, with more benefit than when either method of treatment was given alone.

Seventy patients in all have been given a trial with chlorpromazine for a period of two months or more. In 20 cases its administration has been discontinued because no beneficial effect was noticed. This overall result is in agreement with the control series, in which some patients showed considerable reduction in "turbulence", but a few showed no more improvement than that produced in the control group with a placebo. To date, five apparently chronic psychotics have been well enough to leave hospital.

Summary.

A controlled study has been made of the effect of chlorpromazine on chronic schizophrenic patients. The benefit is significantly better than that derived from a placebo, but is not uniform. Some patients respond well, whereas others do no better than the placebo group. The improvement due to the quietening effect of chlorpromazine in disturbed patients seemed to benefit other patients in the ward.

Chlorpromazine has been used in other psychoses and we have noted our general impressions.

The drug seems to have considerable application in psychiatry, but the precise indications require more elucidation. It is our impression that as a mode of treatment chlorpromazine is most effective when supported by an active recreational, occupational and social programme.

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A CLINICAL EVALUATION OF RESERPINE IN THE TREATMENT OF CHRONIC MENTAL PATIENTS.

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RAUWOLFIA SERPENTINA was first mentioned by a German physician and botanist in the latter part of the sixteenth century as having properties which made it a useful remedy for snake-bite, insomnia, dysentery, hypochondria and insanity.

It was not until 1933 that the hypotensive qualities of rauwolfia were appreciated, and although 14 different substances were eventually isolated from the whole drug, the hypotensive and sedative effects were proven to be associated with reserpine only. This pharmacologically interesting alkaloid was isolated by Mueller, Schlitter and Bein in 1952.

Plummer *et alii* describe the effects of reserpine on the central nervous system in animal experiments as a state of quietude, sedation, and reduction in spontaneous activities. However, no abolition of coordinated movements or changes in consciousness resulted, as, for instance, in sedation by barbiturates. Interestingly enough, the electroencephalogram of the animal under the effects of reserpine remained unchanged, whereas sedation by barbiturates produced a definite change in the electroencephalographic pattern. The authors argue that reserpine produces its effects by acting on the central part of the autonomic nervous system. Evidence for this mode of action includes certain signs in the experimental animal, such as myosis, sinus bradycardia, increased gastrointestinal motor and secretory activity, and some degree of hypothermia. The mechanism responsible for the hypotensive effect of reserpine again points towards a central autonomic site of action, probably at the subcortical level, where afferent impulses arising in skin and chest pass through, and efferent impulses pass along sympathetic nerves to blood vessels. Experiments showed conclusively that neither peripheral ganglionic nor adrenergic blockage was responsible for the blood pressure drop. There was no evidence that reserpine had any direct action on blood vessels. A hypothalamic site of action was therefore postulated by the authors—an area where autonomic integration is centred.

The election of this site throws some light on one of the most important effects of reserpine, its sedative action. It will be remembered that stimulation of the anterior hypothalamic region produces sleep in the experimental animal (Hess). A reduction of emotional responses at a hypothalamic level by a pharmacological agent which inhibits sympathetic predominance may well explain the tranquillizing effect of the drug.

Clinically, rauwolfia preparations and lately reserpine have been used fairly extensively in the treatment of hypertension since 1946 in India and since 1950 in England and Australia. Although they produce only a moderate lowering of blood pressure compared with ganglionic blocking agents, their hypotensive action has been enhanced by a considerable decrease in the nervous tension which is nearly always associated with this disease.

Administration of the drug has been remarkably safe, although minor side effects, such as nasal congestion, diarrhœa, dizziness and syncopal attacks, have been described.

Use of Reserpine in Psychiatric Conditions.

Sen and Bose in 1931 published a paper describing *Rauwolfia serpentina* as a new Indian drug for the treatment of high blood pressure and insanity. Since then a number of papers have appeared in the Indian medical literature, stressing the sedative effect of rauwolfia preparations and the relief from "mental irritability". However, these observations were mainly by-products during experiments with hypotensives. Gupta, Deb and Kahali, in 1943, reported on the treatment of schizophrenics, manic-depressives and drug addicts, with improvement in all cases.

Hakim, in 1953, using the whole drug rauwolfia, claimed a recovery rate of 51% in 146 psychotic patients and an even higher rate when the drug was used in combination with electroconvulsive treatment. He also reported favourable results in psychoneuroses and other psychiatric conditions.

Noce, Williams and Rapaport, in 1954, published the results obtained in a series of 20 patients, 12 of whom showed a great improvement. These investigators selected their patients from a pool of chronic schizophrenics who had not responded to any form of treatment. They state that improvement is characterized by increased cooperation, gain in weight, cheerfulness and employability.

The side effects of the drug are stated to be flushing of the face and extremities, vertigo, weakness, fall in blood pressure, and, occasionally, epileptic seizures.

Reserpine was used by these authors in doses of 0·5 milligramme three to four times daily. They suggest the intravenous administration of one to ten milligrammes of reserpine simultaneously with oral therapy.

Kline's most meticulously designed experiment to evaluate the drug deserves special mention (Kline, 1954); 411 patients were used in his series; all but 5·6% were schizophrenics. Subjects were selected from wards where conduct was chronically disturbed. The drugs used were both the crude whole drug (rauwolfia) and reserpine. The daily dose of the whole drug was 500 milligrammes and of reserpine one milligramme. Medication was continued for one month.

No description of the methodology, blood pressure and pulse changes is given, but the results indicated that raufolfia had a definite sedative action on mental patients, although the response varied greatly from patient to patient. There was no evidence that the drug had altered the schizophrenic process in any way. Kline also reports, although with the "utmost caution", favourable results in psychoneurotics, consisting of a diminution of conversion symptoms and free-floating anxiety.

The Present Study.

In the present study patients were selected from chronic wards of the Beechworth Mental Hospital. The main criterion for their selection was overt verbal and motor aggression in a setting of chronic mental illness, varying but little from day to day and presenting a problem in management. The word "tension" is deliberately avoided as the affective connotation of this term makes its use of doubtful value, particularly in schizophrenic illness.

Twelve patients were included in the trial, of whom nine were frankly schizophrenic, and three were diagnosed as psychotic mental defectives. Their ages ranged from fifteen to sixty-seven years. Two patients were males and the rest females. As an accurate estimate of the duration of their illness was impossible, the dates of their admission to the hospital were given instead. A state of chronicity had been reached in every case, with only minor fluctuations in symptoms over long periods.

Nine patients had received previous physical treatment (electroconvulsive therapy, insulin) and the remaining three patients had been permanent inmates of a mental institution for periods of twenty to thirty-four years and had apparently been considered as unlikely to improve with any form of physical treatment. Two patients had a moderate degree of essential hypertension without cardiac or renal involvement and with normal fundi; the other ten patients showed no physical abnormality.

Patients were assessed every week over a period of four weeks. They remained in their respective wards during the trial and did not receive any other form of treatment.

Weekly evaluations were compounded from an objective assessment of behaviour by the ward personnel (with the aid of a behaviour chart) and impressions gained during the patient-doctor interview.

The number of assaults committed in the wards, noisiness, and type as well as frequency of sedation were disregarded as unreliable and misleading factors in the assessment of the drug.

Auscultatory blood pressure readings, before and during the experiment, were taken under standard conditions and by myself.

Medication.

"Serpasil" (Ciba) was used during the trial, with ampoules containing 1·0 milligramme and tablets containing 0·5 milligramme of the crystalline alkaloid reserpine. The drug was introduced fairly rapidly during the first week, patients receiving 0·5 milligramme of "Serpasil" three times a day as

TABLE I.

Clinical Details and Response to Reserpine Therapy in 12 Cases.

Case Number; Age (Years) and Sex of Patient.	Year of Admission to Hospital.	Diagnosis.	Previous Treatment.	Aggression Prior to Treatment.	Blood Pressure Prior to Treatment.[a]	Blood Pressure after 1 Week.[a]	Blood Pressure after 2 Weeks.[a]	Blood Pressure after 3 Weeks.[a]	Blood Pressure after 4 Weeks.[a]	Side Effects.	Improvement after 1 Week.	Improvement after 2 Weeks.	Improvement after 3 Weeks.	Improvement after 4 Weeks.
I; 42, male.	1952	Paranoid schizophrenia.	Confusional E.C.T.[1]	Pronounced.	135/95	130/80	105/70	115/75	120/80	Nasal congestion.	Pronounced.	Pronounced.	Pronounced.	Pronounced.
II; 67, male.	1936	Paranoid schizophrenia.	Nil.	Pronounced.	135/85	100/70	130/80	110/70	120/80	Diarrhœa.	Pronounced.	Moderate.	Moderate.	Pronounced.
III; 66, female.	1945	Schizophrenia.	E.C.T.	Moderate.	190/100	140/85	120/65	150/85	150/85	Diarrhœa; syncope.	Nil.	Nil.	Nil.	Moderate.
IV; 56, female.	1936	Schizophrenia.	E.C.T.	Pronounced.	130/80	130/80	130/80	130/80	130/80	Nil.	Nil.	Nil.	Nil.	Nil.
V; 48, female.	1952	Paraphrenia.	E.C.T.	Pronounced.	130/70	130/70	85/60	90/60	90/60	Diarrhœa.	Moderate.	Moderate.	Nil.	Nil.
VI; 36, female.	1953	Paranoid schizophrenia.	Insulin.	Pronounced.	120/75	105/60	85/60	95/60	100/60	Dizziness.	Pronounced.	Pronounced.	Pronounced.	Pronounced.
VII; 48, female.	1940	Paranoid schizophrenia.	Insulin; E.C.T.	Pronounced.	130/75	125/65	125/65	120/70	120/70	Nil.	Nil.	Nil.	Moderate.	Moderate.
VIII; 65, female.	1927	Schizophrenia.	Nil.	Moderate.	140/70	130/70	130/70	105/50	110/70	Nil.	Moderate.	Nil.	Moderate.	Moderate.
IX; 22, female.	1940	Psychosis with mental deficiency.	E.C.T.	Pronounced.	140/80	130/70	130/70	130/70	130/70	Nil.	Moderate.	Moderate.	Moderate.	Nil.
X; 44, female.	1929	Schizophrenia.	E.C.T.	Pronounced.	220/110	185/105	145/80	180/95	220/110	Nil.	Nil.	Nil.	Nil.	Nil.
XI; 48, female.	1921	Psychosis with mental deficiency.	Nil.	Moderate.	150/85	120/80	105/60	120/80	120/80	Nil.	Moderate.	Moderate.	Moderate.	Moderate.
XII; 15, female.	1946	Psychosis with mental deficiency.	E.C.T.	Pronounced.	100/60	100/60	100/60	100/60	100/60	Nil.	Pronounced.	Pronounced.	Pronounced.	Pronounced.

[1] Electroconvulsive therapy.
[a] Systolic/diastolic, millimetres of mercury

well as daily intramuscular injections of 2·0 milligrammes of "Serpasil". After the first week parenteral therapy was stopped and oral medication with 0·5 milligramme three times daily was continued for the rest of the trial.

Reports of Cases.

A brief clinical summary of each of the 12 cases follows. A description of detailed personality settings has been omitted, as there did not appear to be any direct correlation with the response to reserpine.

CASE I.—A male patient, aged forty-two years, a railway employee, had been admitted to hospital in 1952 with the diagnosis of paranoid schizophrenia. On his admission he was hostile, restless, and vividly hallucinated, hearing his wife's and the superintendent's voices saying "bad things" about him. He was aggressive on a verbal level. He had a course of confusional electroconvulsive therapy (33 convulsions) in 1954. He recovered from the confusional period with the psychotic features unchanged.

At the time of commencement of reserpine treatment he had bizarre delusions (a woman sucking his blood, pox transmitted by air, rejected Freemasons plotting against him *et cetera*). He was fairly accessible, lived in an open ward, and had ground parole. He was irritable and aggressive with some outbursts of violence, and virtually unemployable. No deterioration was present. Physical examination of the patient revealed no abnormality. His blood pressure was 135 millimetres of mercury, systolic, and 95 millimetres, diastolic.

Reserpine treatment was commenced in February, 1955, with daily intramuscular injections of 2·0 milligrammes and 0·5 milligramme given orally three times a day. At the end of the first week the patient was quiet, complained of excessive sleepiness during the day, and exhibited none of his previous aggressiveness and irritability. No delusional material could be obtained even after direct questioning. His blood pressure was then 130 millimetres of mercury, systolic, and 80 millimetres, diastolic. Intramuscular injections of reserpine were then stopped, and oral medication with 0·5 milligramme three times a day was continued. At the end of the second week the patient's blood pressure was 105 millimetres of mercury, systolic, and 70 millimetres, diastolic. He was cooperative, conversed fairly rationally, did not show any agitation, and volunteered to do some work in the wards. After three weeks he was still cooperative and did not show any emotional outbursts, but delusional material was again emerging. At the end of the fourth week delusions and tactile hallucinations were again in evidence. However, the patient was smiling and discussed his psychotic symptoms light-heartedly. His blood pressure was 120 millimetres of mercury, systolic, and 80 millimetres, diastolic. The only side effect of the drug was a slight nasal congestion which subsided rapidly with ephedrine medication.

CASE II.—A male patient, aged sixty-seven years, a labourer, had been admitted to the hospital in 1936 with the diagnosis of paranoid schizophrenia. On his admission to hospital he was hallucinated and saw hidden meanings in the behaviour of people. His delusions were mainly concerned with the Victorian Police Force activities. He asked questions in an aggressive manner and at times broke into violent, abusive language. He was determined to leave, demanding his discharge whenever he met a member of the medical staff. An interview shortly before treatment was begun showed him to be vividly hallucinated, shouting defiantly to imaginary people, aggressive and non-cooperative. There had been some deterioration over the past years. Physical examination revealed no abnormality; his blood pressure was 135 millimetres of mercury, systolic, and 85 millimetres, diastolic. Reserpine treatment was commenced in February, 1955. After a week's treatment his blood pressure, which had dropped to 100 millimetres of mercury, systolic, and 70 millimetres, diastolic, after the third day, was again 135 millimetres of mercury, systolic, and 75 millimetres, diastolic. The patient exhibited lassitude, his shouting had stopped, and he was able to talk rationally about neutral subjects, but could not be engaged in a conversation which included his hallucinatory experiences. After two weeks his blood pressure was 130 millimetres of mercury, systolic, and 80 millimetres, diastolic, and he was again hallucinated, talking softly to imaginary voices. However, his attention could easily be engaged, he was smiling, showed no traces of aggression, and was able to do useful work in the ward. At the end of the third week his blood pressure was 110 millimetres of mercury, systolic, and 70 millimetres, diastolic, and he had maintained his improvement. After four weeks' treatment his blood pressure was 120 millimetres of mercury, systolic, and 80 millimetres, diastolic. He smilingly referred to his auditory hallucinations as "people talking rubbish". Little affect appeared to be connected with his auditory hallucinations. Seventy-two hours after the commencement of reserpine treatment this patient had a bout of diarrhœa, which ceased without any alteration of the reserpine dosage.

CASE III.—A housewife, aged sixty-six years, had been first admitted to hospital in 1945 with a paranoid psychosis which was ultimately diagnosed as schizophrenia. The patient, at that time, had ideas of reference and admitted auditory hallucinations. She was extremely resistive, refusing food and shouting incessantly.

Over the years her mental condition showed little change. In 1951 she was described as noisy, aggressive, impulsive and unemployable. In 1954 she had a course of electroconvulsive therapy which did not materially arrest the disease process. A mental examination, just prior to reserpine treatment, found her floridly delusional, hallucinated, but intellectually well preserved, shouting and wailing incessantly, and so negativistic in her behaviour as to make a physical examination extremely difficult. Her physical health was good, with the exception of a raised blood pressure (190 millimetres of mercury, systolic, and 100 millimetres, diastolic). Cardio-renal and fundus examinations revealed no abnormality. Reserpine treatment was commenced in February, 1955. After one week her blood pressure readings were 140 millimetres of mercury, systolic, and 85 millimetres, diastolic. The patient was still wailing at intervals, though with less intensity. Her condition was otherwise unchanged. At the end of the second week her blood pressure was 120 millimetres of mercury, systolic, and 65 millimetres, diastolic, and there was no noticeable improvement in her mental condition. The third week again brought no change. After four weeks' treatment her blood pressure was again 150 millimetres of mercury, systolic, and 85 millimetres, diastolic; the patient was more accessible, and her verbal and physical over-activity had been replaced by an almost complacent attitude. The ward personnel had little difficulty in managing her. An interview showed clearly that her delusions had not altered in content. This patient had a violent attack of diarrhœa on the third day of the treatment, followed by a syncopal attack.

CASE IV.—A female patient, aged fifty-six years, had been admitted to the hospital in 1936 with the diagnosis of acute mania. On her admission she was noisy and excited, and she showed some grimacing and manneristic behaviour with inappropriate affect. Her mental condition remained more or less the same. However, impulsive acts were observed on a number of occasions, and she was considered dangerous. In 1947 she was described as gazing into space, mumbling incoherently and requiring restraint at times. She then began to look dirty and dilapidated. The diagnosis was changed to chronic schizophrenia.

In 1954 she had two courses of electroconvulsive therapy, both without alteration in her symptoms.

A mental examination before the commencement of reserpine treatment revealed typical schizophrenic thought distortion and auditory hallucinations. Considerable restlessness and aggression were present; she was beating the desk with her fists, threatening the staff and refusing to obey simple commands. This patient had shown signs of deterioration over the last few years. Her physical condition was satisfactory; her blood pressure prior to treatment was 130 millimetres of mercury, systolic, and 80 millimetres, diastolic.

Reserpine treatment was commenced in February, 1955, and continued for four weeks. At the end of that period she was still violent, impulsive and incoherent—in short, unimproved. Her blood pressure had remained stable right through the course of the treatment.

CASE V.—A female patient, aged forty-eight years, a cleaner, had been admitted to hospital first in 1952 with the diagnosis of paraphrenia. She had bizarre delusions, including changes of sex, interference by radio transmitters *et cetera*. In 1954 a short course of electroconvulsive therapy was given, but suspended, as the patient showed alarming signs of collapse during the clonic phase. Prior to reserpine treatment she was fairly accessible and spoke freely about her hallucinatory experiences, including haptic sensations "which gave her gonorrhœa". Her answers were evasive and showed a "knight's move" pattern. She was extremely tense, shouting to imaginary voices and demanding urgent attention by grabbing the staff by their clothes and refusing to release them. Nevertheless, she was able to do some work in the wards. Her physical health was good; her blood pressure was 130 millimetres of mercury, systolic, and 70 millimetres, diastolic.

Reserpine treatment was commenced in February, 1955, with the usual dose; but intramuscular injections had to be reduced to one milligramme daily, as the patient experienced a severe bout of diarrhœa after forty-eight hours. At the end of the first week her blood pressure was unchanged; she was quieter and more cooperative, and did not seem inclined to discuss her delusions with nurses and doctors. After two weeks her blood pressure was 85 millimetres of mercury, systolic, and 60 millimetres, diastolic, and she had maintained her improved state. At the end of the third week, however, outbursts of violence were again in evidence; they were on a verbal level only, and her blood pressure was then 90 millimetres of mercury, systolic, and 60 millimetres, diastolic. The end of the fourth week saw her again violent, using foul language and vividly hallucinated. Her condition was unimproved.

CASE VI.—A female patient, aged thirty-six years, a domestic, had been admitted to hospital first in 1953 with the diagnosis of paranoid schizophrenia. This patient was a New Australian who apparently had had previous schizophrenic episodes. She had had insulin treatment in Austria in 1945. On her admission to hospital she was grossly delusional and spoke of having been kidnapped, working as a spy for the British Intelligence Service, and having been adopted by Adolf Hitler's sister. She denied any hallucinations, her memory and orientation were unimpaired, and she appeared to be of superior intelligence. In 1954 she had another course of full-coma insulin therapy, without showing any improvement. In 1955, just prior to reserpine treatment, she exhibited the foregoing mental symptoms, but in addition showed considerable "tension", occasionally exploding into wild shouting and physical violence. This patient on one occasion had broken all the windows of the ground floor of the administrative building.

Physical examination of the patient revealed no abnormality; her blood pressure was 120 millimetres of mercury, systolic, and 75 millimetres, diastolic. Reserpine treatment was commenced in February, 1955. After one week her blood pressure had dropped to 105 millimetres of mercury, systolic, and 60 millimetres, diastolic; she appeared quiet and rational, but complained of extreme sleepiness and occasional attacks of dizziness. At the end of the second week her blood pressure was 85 millimetres of mercury, systolic, and 60 millimetres, diastolic. All physical symptoms of discomfort had disappeared. She was quiet and cooperative and was doing needlework in the occupational therapy room. After three weeks' treatment she was still quiet, smiling and reluctant to discuss her delusions. Her blood pressure was still 95 millimetres of mercury, systolic, and 60 millimetres, diastolic. After the completion of the four weeks' course of treatment she appeared very much improved, discussing intelligently personal problems and her probable discharge from hospital. There had been no violent outbursts since the beginning of reserpine treatment. When questioned about her delusional ideas she smiled and gave evasive answers. It was obvious that she was dissimulating.

CASE VII.—A female patient, aged forty-eight years, a school teacher, had been admitted to hospital in 1940 with the diagnosis of paranoid schizophrenia. On her admission to hospital she was frankly psychotic, refused to answer any questions, yawned excessively and resented any attempt to examine or help her in any way. She remitted spontaneously within a few days, but in 1941 she was readmitted to hospital with ideas of reference, laughing to herself and having catatonic episodes. Full coma insulin treatment (40 comas) produced some improvement, but she retained some speech mannerisms, behaved impulsively and was obviously unfit to be discharged. In 1942 she was described as vividly hallucinated and out of touch with reality. Since then she has been aggressive towards the ward personnel and other patients, delusional and hallucinated. In 1954 she had a course of electroconvulsive therapy with temporary improvement, but she relapsed quickly and, just before reserpine treatment was started she was grossly delusional, hallucinated in every sense and extremely impulsive. Her management was a great problem, as she was involved in many fights and resented the slightest restraint. Her intelligence was well preserved. Physical examination of the patient revealed no abnormality. Her blood pressure was 130 millimetres of mercury, systolic, and 75 millimetres, diastolic.

After two weeks' treatment her blood pressure had dropped to 125 millimetres of mercury, systolic, and 64 millimetres, diastolic. At the end of the third week she appeared sleepy and more cooperative, and her blood pressure was then 120 millimetres of mercury, systolic, and 70 millimetres, diastolic. After four weeks' treatment her delusional ideas were unchanged; she was still having occasional outbursts of violent behaviour, but there was "less drive" in her conduct, and the nursing staff reported that she was far more easily managed. She seemed slightly improved.

CASE VIII.—A housewife, aged sixty-five years, had been admitted to hospital in 1927 with ideas of unworthiness, depression and confusion. She was discharged in 1928, still depressed, agitated and refusing to eat. The patient was readmitted to hospital in 1932, mute, negativistic and inaccessible. She remained in that state until 1938, when her behaviour became erratic, she showed mannerisms of speech and she appeared hallucinated. Her condition was then diagnosed as chronic schizophrenia.

Her mental condition remained more or less the same over the years. She was resistive, stared into space and spent hours squatting in some corner of the ward garden. In February, 1955, she was unmanageable, beating other patients with her fists. Her speech was incoherent and often neologistic, and she conversed with imaginary voices. Her physical health was good, and her blood pressure was 140 millimetres of mercury, systolic, and 70 millimetres of mercury, diastolic, prior to treatment. At the end of the first week's treatment her blood pressure was 130 millimetres of mercury, systolic, and 70 millimetres, diastolic; she was quieter and more manageable, but still incoherent in her speech and out of touch with reality. During the second week she relapsed and was aggressive, violent and difficult to control. At the end of the third week her blood pressure had dropped to 105 millimetres of mercury, systolic, and 50 millimetres, diastolic; she was quiet, obeyed simple commands and cooperated during her physical examination. After four weeks' treatment (her blood pressure being 110 millimetres of mercury, systolic, and 70 millimetres, diastolic) she remained obviously psychotic; but her conduct was considerably improved, and she no longer presented a problem of management to the nursing staff.

CASE IX.—A female patient, aged twenty-two years, with no occupation, had been admitted to hospital in 1940 with the diagnosis of congenital mental deficiency. She was then mute, unable to feed herself, extremely destructive and aggressive. She spent the day either sitting motionless in a chair or in purposeless over-activity. In 1953 the differential diagnosis of schizophrenia was discussed. A course of electroconvulsive therapy was administered without the production of any change in her condition. In February, 1955, she was again inaccessible, gnawing her fingers, beating other patients and biting nurses who attended to her needs. Her physical health was good; her blood pressure was 140 millimetres of mercury, systolic, and 80 millimetres, diastolic.

After the first week of reserpine treatment she appeared quieter, but still mute and inaccessible. Her blood pressure was then 130 millimetres of mercury, systolic, and 70 millimetres, diastolic. During the second and third weeks she was quiet and more cooperative and smiled frequently, and there were no outbursts of violence. At the end of the fourth week, however, she had reverted to her previous behaviour, biting, kicking and attacking other patients, and was virtually uncontrollable.

CASE X.—A housewife, aged forty-four years, had been admitted to hospital in 1929 with the diagnosis of schizophrenia. On her admission she was withdrawn, answered in monosyllables and had ideas of reference and persecution. Her mental condition had remained unchanged during her whole period in hospital. She stood in one place for long periods, grimacing, and with occasional outbursts of violent behaviour and mutism. In 1954 she had several courses of electroconvulsive therapy without apparent change in her mental condition. In 1955 she was mute, resisted all attention given to her and was described as unmanageable by her nurses. Her blood pressure was 220 millimetres of mercury, systolic, and 110 millimetres, diastolic, and all clinical investigations gave negative findings.

During the course of reserpine treatment her blood pressure had fluctuated considerably, reaching a level of 145 millimetres of mercury, systolic, and 80 millimetres, diastolic, at the end of the second week, and rising to 220 millimetres of mercury, systolic, and 110 millimetres, diastolic, during the fourth week. Her mental condition remained unchanged during the course of treatment.

CASE XI.—A female patient, aged forty-eight years, with no occupation, had been admitted to hospital in 1921 with the diagnosis of imbecility. She was then described as destructive, threatening to kill people with a knife, and prone to uncontrollable fits of violence. In 1939, during one of her many outbursts, she broke a window pane and cut her right wrist, severing all flexor tendons. She was able to do simple ward duties, such as dusting, sweeping and carrying buckets of water. In 1939 her conduct began to

deteriorate. She was unemployable and appeared to be hallucinated, and her impulsive acts had increased in frequency. In February, 1955, she was again unmanageable, breaking windows, destroying her clothes and talking to "spirits" in the air. Her physical health was good apart from atrophy of her right hand. Her blood pressure was 150 millimetres of mercury, systolic, and 85 millimetres, diastolic.

Reserpine treatment was started, and after two weeks' treatment she appeared much improved, doing ward work on a simple level, without exhibiting violent or destructive behaviour. Her blood pressure had dropped to 105 millimetres of mercury, systolic, and 60 millimetres, diastolic. At the end of four weeks she was still hallucinated and cooperative, smiling and easily managed. Her blood pressure was then 120 millimetres of mercury, systolic, and 80 millimetres, diastolic.

CASE XII.—A female patient, aged fifteen years, with no occupation, in 1946 had been admitted to Pleasant Creek Hospital with the diagnosis of congenital mental deficiency. In 1952 she was transferred to Kew Mental Hospital, where she proved to be a difficult patient. She frequently attacked other children, was non-cooperative and appeared to be hallucinated. During that year she had a series of epileptic seizures. In 1953 and 1954 no major convulsions were observed; but the nursing staff reported occasional attacks of "frenzy" in the child. She was admitted to Beechworth Mental Hospital in 1955, where a mental examination showed her intelligence to be at a high imbecile level. She giggled a lot without proper cause, and admitted auditory hallucinations which obviously caused her sudden erratic behaviour. A course of electroconvulsive therapy did not alter her symptoms. Her conduct, just prior to reserpine treatment, was characterized by foul language, physical violence against other patients and nurses, and resistance against any form of discipline. Physical examination of the patient revealed no abnormality. She was undersized for her age, with coarse features and a hoarse voice. Her blood pressure was 100 millimetres of mercury, systolic, and 60 millimetres, diastolic.

The diagnosis was changed to schizophrenia. Reserpine treatment was commenced in February, 1955. During the first week of her treatment she became more manageable, obeyed simple commands and could be induced to do some ward work. At the end of two weeks she was cooperative, had not shown any outbursts of violence, and continued working in the ward. During the third week she relapsed and for two days reverted to her old violent behaviour. However, she soon settled down again, and at the end of the fourth week she was again working well without her previous aggressiveness. She was still hallucinated and at times withdrawn. Her blood pressure had not changed during the course of treatment.

Results.

Tabulation of results shows that four patients had significantly improved after four weeks' treatment; in four cases the improvement could be called moderate only, and four were unchanged. Although a general impression of the patient was decisive in the assessment, increased accessibility, cessation of overt verbal or motor aggression, employability and, in some cases, a decrease in emotional charge of hallucinatory and delusional material proved to be of considerable value.

Age, duration of illness and previous treatment did not seem to bear any relation to the results. Blood pressure fluctuations during the course of treatment again showed no prognostic significance in our small series. In Case VI the patient exhibited considerable blood pressure changes and significant improvement; in Case V also similar changes occurred, but no improvement. In two cases some improvement occurred during the first two weeks, but at the end of the trial period the patient had relapsed. Further investigations into dosage and type of administration may throw some light on these problems.

It is also interesting to note that the three patients who prior to treatment manifested only a moderate degree of aggression were only moderately improved after four weeks.

Side effects, such as nasal congestion, dizziness and diarrhœa, were so slight as to be disregarded.

Discussion.

The paucity of effective drugs in the specific treatment of mental disorders seems to justify this study, the object of which is to examine the effects of reserpine on a series of disturbed mental hospital patients. It is impossible to make statistically valid statements of the results from so small a number of patients. Again, no absolute criteria in judging the effects of the drug are possible because of the complexity of the mental symptoms manifested.

Initially, an attempt was made to classify leading symptoms according to affect, thought disorder or overt behaviour, and to judge results on a rating scale incorporating these features. However, it soon became obvious that a general impression of the patient's conduct and his interpersonal relationships with the nursing staff and his fellow patients formed better criteria for the assessment of results.

In all improved patients, but more strikingly in the four patients who showed pronounced changes, a state closely resembling that following lobotomy (or classical leucotomy) could be observed. There existed, on the one hand, a *laissez-faire* attitude, a smiling acceptance of hallucinatory experiences and of threatening delusional material, and, on the other hand, an increase in reality proving, which combined to impress the observer as improvement. The absence of serious side-effects and the comparative ease of administration, compared with, for example, electroconvulsive therapy, suggest that reserpine may prove a useful weapon in the treatment of the chronically mentally ill. Further investigations into the question of habituation and the effects of reserpine in combination with electroconvulsive therapy appear indicated.

An observation of the clinical effects of reserpine in psychotics suggests that its field of usefulness may be extended to the treatment of psychoneurotic conditions. Whether tension is expressed as frank anxiety, disguised as a conversion symptom or expressed as an obsessive ritual, it remains the "leading" symptom, and, unfortunately, often a formidable barrier in the path of psychotherapy. In our series a damping down of feeling resonance was definitely present, but partly overshadowed by psychotic features.

Summary.

1. The pharmacology and clinical use of reserpine are discussed.

2. Twelve disturbed chronic psychotic patients were treated with reserpine, and the results were assessed after four weeks' treatment.

3. Four patients were moderately improved, in another four the improvement could be described as significant, whilst the remaining patients did not show any changes in their mental condition.

4. Side effects were slight and did not influence the course of the treatment.

5. Further observations on the action and use of reserpine in psychomotor activity would seem to be indicated. It is suggested that its effect in the psychoneuroses should be investigated.

Acknowledgement.

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Rho (D^u) VARIANTS IN BLOOD DETECTED ONLY BY THE COOMBS ANTIGLOBULIN TEST, AND THEIR SIGNIFICANCE.

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SIMPLE anti-Rho (anti-D) testing of patients provides the clinician with the important information that the subject is Rh-positive or Rh-negative, and generally those data concerning Rh status are sufficient in most cases. To achieve a high degree of accuracy in Rh testing in Australia, potent and specific agglutinating testing reagents are provided as a free service to approved hospital laboratories and pathologists. Two anti-Rh testing reagents are always supplied so that blood samples found to be Rh-negative with one serum can then be tested against the second. The foregoing procedure is, of course, Rh testing reduced to its simplest terms, for, as is now well known, the Rh blood group is characterized by a complex system of antigens and antibodies, and these can be adequately dealt with only in a central laboratory. Numerous variants of the elementary or primary antigens—for example, variants of Rho (D), rh′ (C) and rh″ (E)—have now been described, and have been summarized by Race and Sanger (1950). It is with the variants of the Rho (D) antigen that this paper is primarily concerned. The variants in question are those not detected with potent Rh-agglutinating sera, but able to be demonstrated by means of the Coombs antiglobulin test (Coombs, Mourant and Race, 1945).

Wiener (1944) first drew attention to "intermediate" genes, which he showed to be associated with the blood types Rho, Rh_1 and Rh_2. The observations were made with specimens of Rh-positive blood which reacted weakly with the usual Rh-typing sera. The hereditary nature of these "intermediate" genes was demonstrated in family studies.

Wiener, Unger and Sonn (1945) demonstrated a high frequency of type Rho amongst Negroid individuals, and also showed that the Rho "intermediate" genes were relatively common in this race, in contrast to their rarity in the white population.

Stratton (1946) described a blood sample of type Rh_2rh which agglutinated with 12 anti-Rho sera and failed to agglutinate with 20 other strong sera. He named the variant D^u, and classified the cells as cD^uE/cde. The same genotype occurred in the subject's father and also in two of his brothers. Stratton showed that anti-Rho (D) sera were of two kinds, which were called anti-D and anti-D+D^u. To date no example of a pure anti-D^u serum has been found, and it has not been possible to separate anti-D^u from anti-D by absorption. Stratton suggested that the D^u variant might be similar to certain "intermediate" types described by Wiener.

Race, Sanger and Lawler (1948*a*) tested 19 samples of selected D^u blood from unrelated persons with about 30 anti-D sera. The tests made included titrations in saline and albumin, and tests by the antiglobulin and elution techniques. They concluded that the 12 anti-Rh sera especially used in their tests would agree in giving positive or negative results with at least 99% of blood samples, and further, that different D^u samples could be graded, from those that were agglutinated in saline by most anti-D sera, down to those which could be recognized as having any D^u component only by giving a positive response to the antiglobulin test with incomplete anti-D serum. They pointed out that blood of the latter type would usually have been classified as rh′rh (Cde/cde) or rh″rh (cdE/cde). Stratton and Renton (1948) reported conclusions at the same time very similar to those reached by Race *et alii*. They pointed out that, as van Loghem (1947) had demonstrated that D^u could be antigenic to an Rh-negative person, D^u should be considered to be Rh-positive, and should be excluded when Rh-negative blood donors were being selected.

Race, Sanger and Lawler (1948*b*) defined D^u as follows:

> If the sample of red cells gives some, but not all, of the reactions of D when tested by the various methods against the battery of agglutinating and incomplete anti-D sera, we call it D^u.

It was observed that while samples of D^ud cells usually did not give identical reactions when tested against numerous agglutinating and incomplete anti-D sera, blood samples of related D^ud persons did give identical reactions, which indicated that the fine distinctions observed were genetically determined. Dunsford (1948) described another type of D^u antigen; this was one found in a sample of blood agglutinated by all the anti-D sera employed, by some of them strongly, and by others more weakly than cells containing the normal Rho (D) antigen.

Simmons and Graydon (1950) very briefly reviewed the literature relative to the Rho variant[1] D^u in relation to its implications in clinical Rh testing. They selected five Rh-aglutinating sera, using the D^u cells (Abel) kindly supplied from Dr. Stratton's Laboratory in Manchester, England, and the sera chosen represented both anti-D and anti-D+D^u. When 500 random blood samples were tested with these five Rh anti-sera, four examples of Rho variants (D^u) were detected, and on further tests it was found that two selected potent Rh-agglutinating sera in current issue at that time agglutinated all four Rho variants. It was concluded that few examples of Rho variants would be missed in practice, if the following recommendations in relation to Rh-agglutinating sera were adhered to:

> Samples of anti-D agglutinating sera used for routine Rh testing should always be examined for specificity, titre and avidity by a central laboratory. Each serum should be tested against as many D^u cells as possible, to determine its "breadth of reactivity" and to eliminate poorly reacting sera. Further, blood samples found to be Rh negative with one anti-D serum should be tested with a second anti-D serum. With this in view these laboratories usually provide at the same time two potent anti-D sera absorbed for use with cells of any blood group, so that doubtful results may be checked by means of the second testing serum.

The foregoing precautions have helped to provide in Australia a uniformly high standard in clinical Rh testing; but even so there still remains that class of Rho (D^u) variant of "low grade" which fails to agglutinate with any potent anti-Rho testing serum, but gives a positive reaction to the anti-globulin test.

The problem of this class of Rho variant was essentially one for blood banks, where donors' erythrocytes would be tested with anti-Rho (D), anti-rh′ (C) and anti-rh″ (E) testing reagents in the classifying of donors as Rh-negative. Few investigations have been reported in which blood classified as Rh-negative, rh (cde), rh′ (Cde) or rh″ (cdE) has been subjected to the anti-globulin test to detect Rho variants. Renton (1949), in limited tests in Manchester, England, obtained results which are shown in Table I.

Mourant (1953), in a personal communication to one of us (R.T.S.), writing of D^u tests in England, made the following statement:

> We tested about 100 bloods which were negative with saline agglutinating anti-C, anti-D and anti-E and found that none of them contained D^u. About half of the people who, on saline tests, appear to be Cde/cde have in fact got D^u. In the case of bloods which are apparently cdE/cde, the proportion of D^u's is less, something like 1 in 6.

The principal investigation in the United States of America on the problem of Rho (D^u) variants in blood donors appears to be that of Rosenfield, Vogel, Miller and Haber (1951). They pointed out that little attention had been paid to the subject in their country, and that their interest was aroused in 1949 by the results of a survey of blood specimens initially typed as Rh-negative at the blood bank of the Mount Sinai Hospital of New York. By the use of a single anti-Rho agglutinating serum in conjunction with the antiglobulin test, it was found that 1·39% of 2949

[1] Wiener has suggested that when an Rho variant occurs, its presence should be indicated by a Germanic R.

persons would have been incorrectly classified as Rh-negative had not the antiglobulin test been used. These authors had considerable difficulty in establishing the specificity of over 20 anti-Rh sera at their disposal. Many contained multiple antibodies, but they eventually obtained a small number of incomplete sera proved to contain anti-Rho antibodies only. (This difficulty in selection of pure reagents applies to any method which uses incomplete or blocking anti-Rh sera for Rh testing.) In their investigation they used both untreated red cells and enzyme-treated cells for the antiglobulin tests. An elution technique was also used. The results of tests compiled from two of their tables are also shown in Table I.

These workers found that the incidence of Rho variants in New York was much higher than had been found in England. In relation to methods of testing for Rho variants, the Americans concluded that, while the anti-Rho incomplete sera to be used for sensitization required careful evaluation, the elution technique was too cumbersome for general use. The use of trypsin-treated cells did not appear to offer any advantages over untreated red cells, when both were used in conjunction with the antiglobulin test.

Materials and Methods.

The donors whose blood samples were tested for Rho variants in the present survey were voluntary donors attached to the Queensland and Victorian Divisions of the Red Cross Blood Transfusion Service. They were regular blood donors, and some had been shown on up to 30 occasions to be anti-Rho (D) negative with potent agglutinating serum. The details have been extracted, but will not be published here.

The antiglobulin serum (Coombs reagent) used was prepared at the Commonwealth Serum Laboratories for general distribution, and for this investigation one batch only was utilized, to ensure complete uniformity of results.

The potent anti-Rho univalent serum used was a pool of two pure incomplete or blocking sera selected from a large number of sera known to have an anti-Rho content. The selection of these pure sera was facilitated by the generous gift of two examples of anti-Rho univalent sera from Dr. A. S. Wiener, of New York.

The blood samples were tested for an Rho variant content as follows:

One drop of a 30% red cell suspension was sensitized with two drops of the selected and neutralized anti-Rho serum for one hour at 37° C. The cells were washed three times with large volumes of saline, and the final suspension made was of 10% strength. One drop of this cell suspension was mixed on a glass slide in a moist chamber with one drop of the diluted Coombs reagent. The tests were read after five minutes at room temperature, and a final reading was made at ten minutes.

Results and Discussion.

The strengths of the positive reactions of those cells having an Rho variant content varied, and in no instance was the strength of the reaction equal to that obtained with normal Rho-positive control cells. In the present survey a total of 378 cell samples were tested, consisting of 220 of type rh, 91 of type rh′, 64 of type rh″, and three of type rh′rh″. All A-B-O blood groups were represented, and no evidence was found of abnormal Rho variant distribution in any particular blood group. The results of the tests are included in Table I. No example of an Rho variant was found in those cells classified as rh, while 48% of cells classified as rh′, 33% of cells classified as rh″ and one of the three regarded as rh′rh″ possessed a hidden Rho (D^u) variant. The distribution of Rho variants within the Rh types was similar to that found in America, excepting that 33% of type rh″ contained an Rho variant compared with 21% in New York. In both America and Australia the distribution of Rho variants in specimens originally classified as type rh′ and type rh″ was higher than that found in the small series reported for England.

The supply of Rh-negative blood donors in Australia is maintained largely through the Red Cross Blood Transfusion Service in each State. As these central laboratories test their donors with anti-Rho (D), anti-rh′ (C) and anti-rh″ (E) testing sera, then, from the results of the present investigation, there is little risk that a supposed Rh-negative donor possessing an Rho variant will be used in the transfusion of an Rh-negative patient. The use of three Rh-testing sera eliminates those donors who possess the rh′ (C) and the rh″ (E) antigens. As these donors would be classified as Rh-positive in the donor panel, and as Rh-negative if they themselves required a blood transfusion, then they would not be used as donors and possibly sensitize Rh-negative patients, nor in turn would they be sensitized as patients to any major Rh antigens which they lacked themselves. With these precautions taken at the source of blood, the central blood bank, there is no evidence that would justify the testing of all Rh-negative blood donors by the time-consuming antiglobulin test. If a high standard of technical accuracy is maintained in blood banks, then undisclosed Rho (D^u) variants do not constitute a real hazard in blood transfusion practice.

Summary.

1. A total of 378 blood donors of types rh, rh′, rh″ and rh′rh″ has been tested by the antiglobulin method for Rho (D^u) variants.

2. The results of the investigation indicate that in blood bank practice there is no justification for the inclusion of this test in selecting donors, provided Rh-negative donors are initially selected by the use of anti-Rho (D), anti-rh′ (C) and anti-rh″ (E) testing sera.

3. The distribution of Rho variants found in the Rh types is similar in America and Australia, and in both countries the percentage found is higher than has been recorded in England.

Acknowledgements.

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TABLE I.

Rho Variants in Blood Donors in England, America and Australia.

Authors.	Country.	Distribution of Rho Variants.	Rh Blood Types.			
			rh(cde).	rh′(Cde).	rh″(cdE).	rh′rh″(CdE/cdE).
Renton (1949)	England	Number tested	—	34	46	1
		Number of Rho variants	—	11	5	0
Rosenfield *et alii* (1951)	United States of America	Number tested	628	161	92	1
		Number of Rho variants	3 (0·5%)	72 (45·0%)	19 (21·0%)	0
Present survey ..	Australia	Number tested	220	91	64	3
		Number of Rho variants	0	44 (48·0%)	21 (33·0%)	1

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THE DIAGNOSTIC VALUE OF PROTEIN-BOUND IODINE AND FORTY-EIGHT HOUR PROTEIN-BOUND I^{131} AS INDICES OF THYROID DISORDERS.

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DURING the past four years a combined project has been carried out in Melbourne on the diagnostic value of various physical and biochemical indices of thyroid function. In the report on this work (Madigan and King, 1954; Winikoff, 1954; Clarke and Aujard, 1954) the following conclusions were drawn:

1. The biochemical determination of protein-bound iodine (P.B.I.) is the best single index which is able to distinguish between hyperthyroidism, euthyroidism and hypothyroidism.

2. The best physical index studied is the level of protein-bound radio-iodine forty-eight hours after the administration of a tracer dose of I^{131} (48-hour P.B.I^{131}). However, this index, does not separate hypothyroidism from other thyroid disorders.

Since the determination of P.B.I. is a rather complicated biochemical procedure and the determination of 48-hour P.B.I^{131} is relatively simple, it was hoped that the latter would prove an adequate index in cases of suspected hyperthyroidism. The relative value of these two indices has now been investigated in routine diagnosis in 100 cases with no known influencing medication,[1] and the results are reported here. All the patients concerned in this investigation were studied at the Royal Melbourne Hospital, and the procedures used are the same as those reported in the thyroid symposium mentioned above.

For comparison, the group of 19 normal controls, studied when the normal limits of these indices were being established, is included.

Results.

The results are grouped according to the final clinical diagnosis. Of the 100 subjects, 51 were classified as euthyroid and 49 as hyperthyroid.

The values of P.B.I. and 48-hour P.B.I^{131} are shown in the histograms of Figure I, and are analysed below. The additional cases studied since the last report have shown that for 48-hour P.B.I^{131} the upper limit of the euthyroid

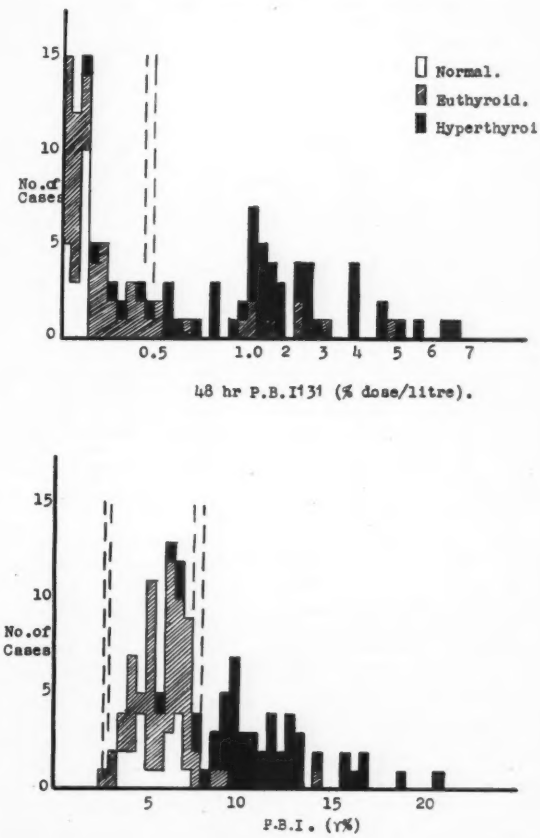

FIGURE I.
Distribution of 48-hour P.B.I^{131} in percentage of the dose per litre (note change of scale at 1·0% dose per litre) and of P.B.I. in microgrammes per 100 millilitres.

group should be raised from 0·3% of the dose per litre to 0·45% of the dose per litre. The new limits become: euthyroid $\leqslant$ 0·45% of the dose per litre; hyperthyroid $\geqslant$ 0·50% of the dose per litre. The limits of P.B.I. remain unchanged at 3·0 to 7·5 microgrammes per 100 millilitres for normal or euthyroid cases, $<$ 2·7 microgrammes per 100 millilitres for hypothyroidism, and $>$ 8·0 microgrammes per 100 millilitres for hyperthyroidism.

The results are presented in Table I.

The diagnostic usefulness of a test rests not in the percentage of euthyroid cases in which low values are obtained and of hyperthyroid cases in which high values are obtained for the indices, but rather in the percentage

[1] In cases where medication known to influence thyroid function had been administered, care was taken that the test was performed only after a sufficient time interval (Winikoff, 1954). In isolated cases, however, residual effects may have persisted to influence the accuracy of the tests.

TABLE I.

Diagnosis.	Number of Cases.	P.B.I.			48-hour P.B.I^{131}.		
		Correct.	Uncertain.	Wrong.	Correct.	Uncertain.	Wrong.
Normal	19	18	0	1	19	0	0
Euthyroid	51	46	1	4	39	1	11
Hyperthyroid	49	43	2	4	43	1	5

of low values associated with euthyroidism and of high values associated with hyperthyroidism. The results are presented from this viewpoint in Table II.

When the results of P.B.I. and 48-hour P.B.I^{131} tests were combined, the findings in the 100 cases were as follows: 39 subjects had high P.B.I. and high 48-hour P.B.I^{131} indices, of whom 37 were hyperthyroid and two euthyroid; 36 had low P.B.I. and low 48-hour P.B.I^{131} indices, of whom

TABLE II.

Index.	Value of Index.	Number of Cases.	Classification.			Percentage Correct.
			Correct.	Uncertain.	Wrong.	
P.B.I.	All results	100	89	3	8	89
	High ..	47	43	—	4	94
	Low ..	50	46	—	4	92
48-hour P.B.I^{131}.	All results	100	82	2	16	82
	High ..	54	43	—	11	80
	Low	44	39	—	5	89

none were hyperthyroid and 36 were euthyroid; seven had a high P.B.I. index and a low 48-hour P.B.I^{131} index, of whom five were hyperthyroid and two euthyroid; 13 had a low P.B.I. index and a high 48-hour P.B.I^{131} index, of whom four were hyperthyroid and nine euthyroid; five had one index uncertain, the other in all cases giving a correct diagnosis.

These findings are set out in Table III.

TABLE III.

Number of Cases.	Value of Index.		Number in Each Classification.	
	P.B.I.	48-hour P.B.I^{131}.	Hyperthyroid.	Euthyroid.
39	High.	High.	37	2
36	Low.	Low.	0	36
7	High.	Low.	5	2
13	Low.	High.	4	9
5[1]	—	—	—	—

[1] With one index uncertain, all were classified correctly by the other index.

From this it can be seen that the diagnostic accuracy of the P.B.I. index is not improved by combination with the 48-hour P.B.I^{131} index. However, if a low 48-hour P.B.I^{131} index is taken as definitely indicating a euthyroid state, and if the P.B.I. values are considered only in the cases of high 48-hour P.B.I^{131} index, the correct classification can be improved from 82% for 48-hour P.B.I^{131} index to 89%.

Discussion.

It is worth remembering that the P.B.I. and the 48-hour P.B.I^{131} indices do not measure the same aspect of thyroid function. The P.B.I. index measures the level of circulating hormone, whereas the 48-hour P.B.I^{131} index is related to the rate of iodine turnover in the body. Consequently a high value of P.B.I^{131} may be caused either by hyperactivity of the gland or gland remnant, or by rapid release of hormone into the blood-stream in cases of iodine starvation in euthyroid or hypothyroid subjects (McGirr and Hutchinson, 1953). This is supported by our finding that a low value of P.B.I^{131} is usually associated with euthyroidism, while high values do not exclude this possibility. In view of this it is planned to reduce the number of P.B.I. determinations required by first determining the 48-hour P.B.I^{131} index. If this index has a low value, it will be accepted as adequate evidence of euthyroidism, but if the value is high a P.B.I. determination will be carried out and the indications of this test will be accepted. In this way the number of P.B.I. determinations will be reduced and the overall procedure will be only slightly less accurate than the P.B.I. index alone.

The 48-hour P.B.I^{131} results in this study appear to be less accurate than other published figures (Goodwin *et alii*, 1951; Macgregor *et alii*, 1953; Silver *et alii*, 1952; Steinitz, 1953). This may be due in part to differences in clinical material, but may also be due to the method of classification. The classification adopted in Table I is more usual, but it is thought that the approach of Table II is of more diagnostic significance.

Although the work reported here indicates the limited usefulness of the 48-hour P.B.I^{131} index, it does show the way in which it can be used in conjunction with P.B.I. to give an overall accuracy which is comparable with that of P.B.I. alone, but with considerable reduction of labour.

Such a simple procedure makes it quite practicable to repeat the test at intervals in cases in which the clinical state is indeterminate and the results are uncertain.

Summary.

A series of 100 cases has been completed, in which P.B.I. and 48-hour P.B.I^{131} indices have been concurrently determined. The relative diagnostic values of the two indices are discussed, and a cause of possible divergence is indicated. A procedure is suggested for combining P.B.I. and 48-hour P.B.I^{131} estimations, in which little accuracy is lost, but considerable work is saved. The overall accuracy of the combined test is shown to be 89% correct classification.

Acknowledgements.

Thanks are due to Dr. K. D. Fairley, Dr. W. P. Holman and Dr. W. E. King for permission to report on their cases, to the staff of the Royal Melbourne Hospital for providing facilities to carry out this work, and to Miss J. Milne, who has supervised the hospital arrangements for the tests. It is a pleasure to thank Professor V. M. Trikojus and Dr. C. E. Eddy for their interest and encouragement in the study.

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COMPARISON OF THE SENSITIVENESS AND CONSISTENCY OF CERTAIN BLOOD TESTS FOR PERSONS EXPOSED TO MINOR DEGREES OF IONIZING RADIATION.

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THE Factory Department, Ministry of Labour and National Service (1953), states that "total and differential counts on the white cells offer the *earliest* means of detecting clinically the biological effects of absorbed radiation".

The object of the present paper is to show that certain other tests than those mentioned above are more sensitive and consistent in detecting effects of exposure to minor amounts of radiation.

These latter tests are the following: the ratio of monocytes *plus* large lymphocytes to small lymphocytes, $\frac{L+M}{S}$,

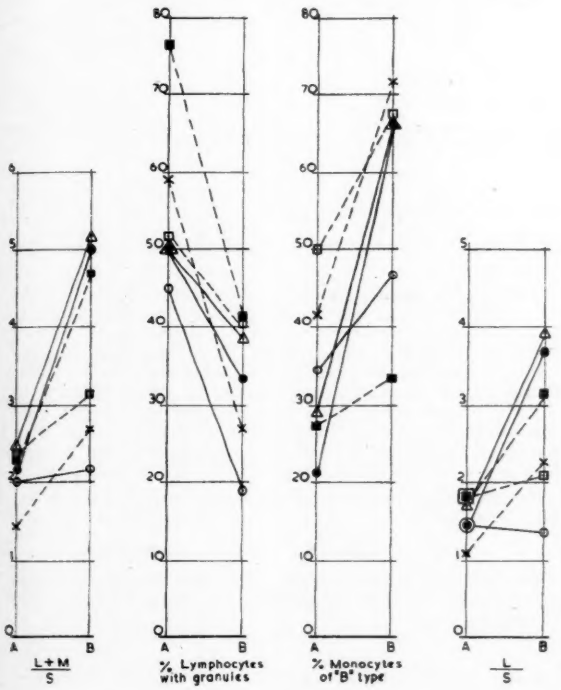

FIGURE I.

A, original values; B, values four to seven months later.

the ratio of large to small lymphocytes, $\frac{L}{S}$, the percentage of lymphocytes which have granules in the cytoplasm, and the percentage of monocytes which are of a particular type (designated "B" type). This type was somewhat similar to that referred to by Browning (1949) and described by Tzanck, Dreyfus and Bessis (1944). It is discussed in another paper.

Previous Work.

Shiels (1954) has shown that in a group of persons exposed to radiation, the mean of the ratios $\frac{L+M}{S}$ and of the percentages of lymphocytes which have granules in the cytoplasm are both significantly different from the mean values in a group of persons not exposed to radiation.

In an unpublished paper I have shown that for each of six persons for whom each of the four new tests was performed prior to exposure, and again after a period of some months (four to seven) of exposure to radiation, the following changes were noted. There was an increase in the ratio $\frac{L+M}{S}$. There was an increase in the ratio $\frac{L}{S}$ (with one exception, in which there was a slight decrease). There was a decrease in the percentage of lymphocytes which had granules in the cytoplasm. There was an increase in the percentage of monocytes which were of particular type "B". In all cases the changes (increase or decrease as the case might be) were statistically significant.

TABLE I.

Changes in Findings for Each Subject on Second Occasion as Percentage of Original Values.

Subject.	Test. Ratio $\frac{L+M.}{S}$	Ratio L : S.	Percentage of Lymphocytes with Granules in Cytoplasm.	Percentage of Monocytes of "B" Type.
B	+110·30	+136·0	−22·8	+128·6
Gu	+103·5	+74·4	−46·0	+186·2
Gr	+130·4	+155·0	−33·4	+214·0
W	+94·15	−107·0	−47·73	+73·34
P	+31·38	+20·0	−21·60	+35·00
Pr	+10·7	−5·7	−58·24	+35·26
Mean ..	+80·07	+81·1	−38·3	+112·07

Present Investigation.

Comparison of Significance of These Tests with the Usual Hæmatological Tests.

The fact that the usual hæmatological tests are not satisfactory in regard to the effects of moderate exposure to radiation is fairly well known.

In the present paper a comparison is made from the point of view of sensitiveness and consistency of response between these four tests and the following: the red cell count, the percentage of hæmoglobin, the white cell count, the percentages of neutrophile cells, lymphocytes and monocytes, the ratio of percentage of lymphocytes to percentage of neutrophile cells, and the absolute counts of neutrophile cells, lymphocytes, monocytes and eosinophile cells.

The four new tests were all carried out by me, the more usual tests were all carried out by the same technical assistant.

The degree of exposure to radiation was probably fairly low. Monitoring films were not available for these six persons; but other persons doing similar work showed exposures usually less than 20% of the tolerance dose (0·3*r* per week—free air dose).

Each of the tests was carried out on each of six persons prior to exposure to radiation, and again after a period of four to seven months' exposure.

The samples of blood on which each test was carried out were of course taken on the same occasion from any particular subject.

The results of all these tests are shown graphically in Figures I and II. Different symbols are used for each subject.

The results of the statistical analysis of the results of these four tests have been discussed in another paper. Of the usual hæmatological tests, the one which approached most nearly to showing consistent variations was the per-

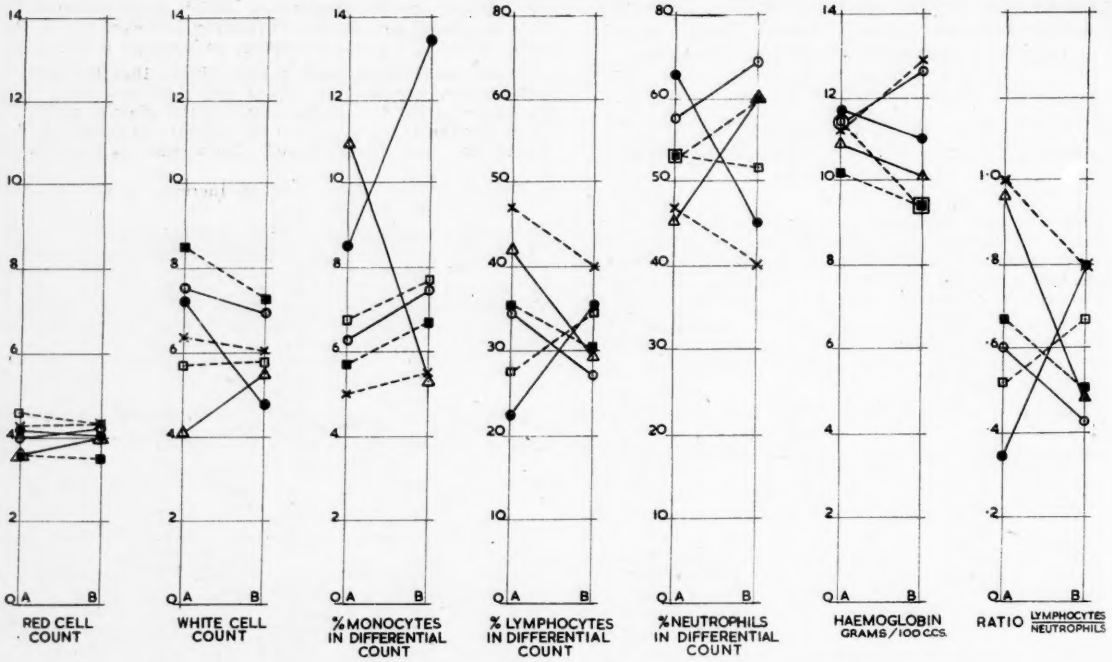

FIGURE II.

A, original values; B, values four to seven months later.

centage of monocytes in the differential count. Even with this test, however, the changes were not statistically significant ($t = 0{\cdot}8$; $P = < 0{\cdot}5, > 0{\cdot}4$). It is obvious from Figure II that the differences in the findings from the other usual hæmatological tests are not significant.

Table I sets out the differences between the values found after some months' exposure and the pre-exposure values, the differences being expressed as percentages of the original values.

In Table II are the results for the percentage changes for the usual blood tests carried out for each subject at the same time as the four new tests. In this table are shown the changes in the percentages of neutrophile cells, lymphocytes, monocytes and eosinophile cells in the differential count, and in the absolute counts of these cells.

Table III sets out the number out of the six tests of each type which showed changes equal to or greater than certain percentages of the original values. It is clear from this table that the four new tests are much more consistent in showing the response to radiation than the usual tests.

There is a suggestion in these results that it might be worth while to pay more attention to the absolute eosinophile cell counts. In this connexion it is pointed out that Moses and Platt (1951) have suggested that the total circulating eosinophile cell count may be a useful indication of exposure to radiation in those exposed to X rays or other radiation hazards. In the results considered in this paper, the numbers of these counted were too small to justify any definite conclusions at the present time as to the effects on them of exposure to radiation.

For a similar reason the basophile cell counts have not been considered.

Tests in Relation to Clinical Condition.

At the times at which these tests were carried out, none of the subjects were complaining of or showing signs of ill-health.

TABLE II.

Changes in Findings for Each Subject on Second Occasion as Percentages of Original Values.

Subject.	In Relation to Absolute Values.								In Relation to Differential Counts.			
	Hæmoglobin Value. (Grammes per 100 Grammes.)	Red Cell Count.	White Cell Count.	Lymphocytes.	Neutrophile Cells.	Neutrophile Cells *plus* Old Metamyelocytes.	Eosinophile Cells.	Monocytes.	Percentage of Neutrophile Cells.	Percentage of Lymphocytes.	Percentage of Monocytes.	Ratio of Lymphocytes to Neutrophile Cells.
B	−7·0	+11·0	+35·0	−7·4	+76·7	+81·3	340·8	+8·69	+35·0	−31·0	−52·0	−50·0
Gu	−8·0	−3·0	−14·0	−26·27	−2·77	−7·5	−50·5	+16·05	+7·6	−14·0	+17·5	−24·0
Gr	−5·9	−2·5	−34·7	+5·33	−53·37	−54·2	−34·7	+4·84	−30·0	+61·0	+58·8	+126·0
W	+10·4	+2·5	−5·0	−18·88	—	+8·78	−4·68	+3·54	+14·1	−15·0	+10·0	−18·0
P	−17·5	−7·0	+2·0	+28·3	−0·73	−5·82	−52·23	+0·97	−7·4	+26·2	+14·0	+28·8
Pr	+19·0	+5·0	−5·0	−28·4	—	+2·81	−34·3	−35·25	+11·7	−22·2	+19·0	−28·3
Mean	−1·5	+1·0	−4·3	−7·88	+3·3	+4·23	+27·4	+0·19	+5·16	+0·83	+11·2	+5·75

Information is being collected in order to enable an appraisal to be made of the significance of these tests in relation to the clinical condition of the subject.

Discussion.

There is an increasing application in industry of methods in which materials or apparatus producing ionizing radiation are used.

TABLE III.

Nature of Test.	Number Out of Six Tests Showing Change Over 40% in Original Value.	Direction of Change.	Number Out of Six Tests Showing Change Equal to or Over 30% in Original Value.	Direction of Change.
Ratio $\frac{L+M}{S}$ ..	4	4+	5	5+
Ratio L : S ..	4	4+	4	4+
Percentage of lymphocytes with granules in cytoplasm	3	3−	4	4−
Percentage of monocytes of "B" type ..	4	4+	6	6+
Red cell count ..	0	—	0	—
Percentage of hæmoglobin ..	0	—	0	—
White cell count	0	—	2	1+ 1−
Percentage of neutrophile cells	0	—	2 (out of 4)	1+ 1−
Percentage of lymphocytes ..	1	1+	2	1+ 1−
Percentage of monocytes ..	2	1+ 1−	2	1+ 1−
Ratio: Lymphocytes / Neutrophile cells	2	1+ 1−	2	1+ 1−
Absolute counts: Neutrophile cells	2 (out of 4)	1+ 1−	2 (out of 4)	1+ 1−
Neutrophile cells *plus* old metamyelocytes ..	2	1+ 1−	2	1+ 1−
Lymphocytes ..	0	—	0	—
Monocytes ..	0	—	1	1−
Eosinophile cells	3	1+ 2−	5	1+ 4−

Whereas in a highly organized establishment such as atomic energy plants, with well-trained staff who are fully cognizant of the hazards involved in their work, it might be sufficient to rely on environmental tests for securing and maintaining safe working conditions, and to dispense, at any rate to a considerable extent, with examinations of personnel, the circumstances are obviously different in industry generally. In the less highly specialized organizations such as exist in industry generally, it is more difficult to achieve selection of suitable personnel, adequate training, consistent and careful and frequent supervision of apparatus and of physical testing, and general hygienic discipline. Over-confidence and inability to appreciate hidden hazards are more likely to be present.

Therefore, tests on personnel must still be carried out.

The more sensitive these are in disclosing initial damage to the organism, the better. The less numerous they have to be and the less exacting their performance, the more likely they are to be carried out with sufficient regularity and frequency. The four new tests are simple to perform, and with careful technique satisfactory results can be obtained.

Summary.

It has been shown that in blood films stained by Leishman's stain the ratio of monocytes *plus* large lymphocytes to small lymphocytes, the ratio of large lymphocytes to small lymphocytes, the percentage of lymphocytes which have granules in the cytoplasm, and the percentage of monocytes which are of a particular type, are more sensitive and consistent tests in regard to exposure to moderate amounts of ionizing radiation than are the more usual blood tests.

Acknowledgements.

Acknowledgement is made to Mrs. W. Van den Berg, assistant in the laboratory of the Industrial Hygiene Division, for the preparation of consistently useful blood films, and for the hæmoglobin determinations, the red and white cell counts, and the differential counts, and to Miss J. Harwood for the diagrams.

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Reports of Cases.

ISCHÆMIC EPISODES IN CARDIAC FAILURE: ACUTE ARTERIAL INSUFFICIENCY WITH AND WITHOUT STRUCTURAL BLOCKAGE.

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ALTHOUGH tissue infarction from peripheral embolism is well recognized in patients suffering from congestive cardiac failure, it is not always appreciated that incipient or established gangrene can sometimes occur without any demonstrable vascular occlusion. It is the purpose of this paper to present case histories of patients, illustrating the development of ischæmic changes, in some proceeding to gangrene, both in the presence and in the absence of demonstrable vascular lesions, and to discuss the mechanism of ischæmic changes in the latter group.

CLINICAL RECORDS.

Ischæmic Changes in Legs.

With Demonstrable Vascular Occlusion.

CASE I.—A., a housewife, aged fifty-four years, was admitted to hospital with auricular fibrillation and congestive cardiac failure which had progressed steadily during the previous twelve months, despite treatment with

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digitalis and diuretics. Forty years previously she had been treated for rheumatic fever. On examination of the patient, she had rapid, uncontrolled auricular fibrillation, the jugular venous pressure was raised and there was considerable œdema of the legs, back and abdominal wall. Examination of the heart revealed signs of left ventricular hypertrophy, and a long, harsh, apical systolic murmur. The blood pressure was 120 millimetres of mercury, systolic, and 90 millimetres, diastolic. A diagnosis of congestive cardiac failure with mitral valve disease and auricular fibrillation was made, and treatment by bed rest, digitalis, salt restriction and diuretics was started. As her condition had not changed a week after her admission to hospital, Southey's tubes were inserted into the œdematous legs, and there was a large flow of blood-stained œdema fluid. Forty-eight hours later a gangrenous area developed on the left leg, starting at the site where it had rested against a "kidney dish" during insertion of Southey's tubes, and despite anticoagulant therapy spread rapidly during the following three days. The gangrene of the left leg then ceased to spread, and gradually dried. Two weeks later she developed sudden pain and numbness of the right arm and a more slowly progressive left flaccid hemiplegia. The radial, brachial and common carotid pulses were impalpable, and thrombosis of the right innominate artery was diagnosed. Nine days later her right leg became cold and pulseless and she died the following day.

Necropsy showed evidence of mitral valve disease without stenosis. The aorta was extremely atheromatous, with firm ante-mortem thrombi occluding the right common carotid and right axillary arteries and the bifurcation of the aorta extending down both common iliac arteries.

Without Demonstrable Vascular Occlusion.

CASE II.—B., a housewife, aged sixty-eight years, had suffered from symptoms of progressive cardiac failure for three years, culminating in her admission to hospital in a grossly dyspnœic and œdematous state. There were signs of aortic stenosis with left ventricular enlargement, raised venous pressure, considerable œdema, bilateral pleural effusion and auricular fibrillation. The blood pressure was 105 millimetres of mercury, systolic, and 85 millimetres, diastolic. Her condition responded initially to treatment by salt restriction, digitalis and *paracentesis thoracis*. Three weeks after her admission to hospital, her left leg suddenly became painful and cold. Examination of the limb left no doubt that the left femoral artery was occluded; no pulses were palpable, and oscillometry revealed no pulsation in either the thigh or the calf. Two days later her right leg underwent similar changes. She became anuric, with a rapidly rising blood urea level, and died in a coma forty-eight hours later.

At necropsy the aorta and the iliac and femoral arteries, although atheromatous, were fully patent. The left femoral vein was occluded by an ante-mortem thrombus which extended well down the thigh into the deep femoral vein.

CASE III.—C., a male Greek, aged sixty-four years, had been treated twice previously for congestive heart failure due to coronary artery disease with auricular fibrillation, twenty-four months and twelve months before his penultimate admission to hospital. On each occasion he had been discharged, symptomatically relieved. He was later admitted in gross congestive cardiac failure with raised venous pressure, gross œdema, bilateral hydrothorax, auricular fibrillation, and enlargement of the liver to the umbilicus. The blood pressure was 130 millimetres of mercury, systolic, and 110 millimetres, diastolic; examination of the heart showed it to be enlarged, and there was a harsh systolic murmur heard maximally at the apex. He was treated by rest in bed, salt restriction, digitalis and diuretics. The response was initially satisfactory, but one week after his admission to hospital it was noticed that all toes had developed the blue-black discoloration of impending gangrene. No pulses were palpable in the left leg; oscillometry revealed good pulsation in the upper part of each calf, but none in the lower part of the calf. The following day, both feet were of normal colour except for the two lateral toes of the left foot. The condition of his feet fluctuated for a few days, but within eight days of the first occurrence of discoloration they appeared completely normal. At this stage oscillometric findings were normal in both legs except at the left ankle, where no pulsations were recorded. As all signs of congestive failure were relieved by this time, the patient was discharged from hospital. Two weeks later he was readmitted after an attack of substernal pain lasting for six hours. The blood pressure was 130 millimetres of mercury, systolic, and 110 millimetres, diastolic, and there were signs of congestive cardiac failure. Five days after his admission to hospital his left leg suddenly became cold, pale and pulseless, and oscillometric pulsations were absent. The foot became increasingly discoloured, and the patient died six days later with no signs of returning circulation in the left leg.

Necropsy revealed enlargement of the heart, with fibrosis of the myocardium, almost complete occlusion of the central descending branch of the left coronray artery and extensive atheroma, but no occlusion of the aorta or its branches. There were no venous thromboses.

CASE IV.—For six years D., a man, aged fifty-four years, had suffered increasing dyspnœa on exertion, requiring admission to hospital on three occasions. He had received out-patient treatment with digitalis and mercurial diuretics. At his final admission he was intensely dyspnœic, with Cheyne-Stokes respiration and raised venous pressure; the blood pressure was 145 millimetres of mercury, systolic, and 110 millimetres, diastolic, and *pulsus alternans* was present when the patient was in the recumbent position. The heart was enlarged and in sinus rhythm, and there was pronounced apical quadruple rhythm. Moist sounds were present throughout both lung fields; the liver was enlarged, but there was no œdema, hydrothorax or ascites. Although treated with rest, salt restriction, digitalis and diuretics, the patient did not show much improvement. During his first month in hospital he developed œdema, which was temporarily relieved by acupuncture. About two and a half months after his admission to hospital, both feet suddenly became black and pulseless. It was believed that arterial occlusion with impending gangrene of the feet had occurred; but no anticoagulant therapy was given, as it was considered that this was a terminal episode. Twenty-four hours later both feet became normal in colour, and there was a good return of blood after blanching by pressure or elevation.

Two weeks later the patient died. Necropsy revealed a dilated heart, with scarring of the antero-lateral wall of the left ventricle and coronary artery atheroma, but no endocardial thrombus. In the aorta and main arteries some atheroma was found, but no occlusion.

Intestinal Infarction.

With Demonstrable Vascular Occlusion.

CASE V.—E., a male patient, aged sixty-four years, was admitted to hospital four days after an anterior myocardial infarction. There were no signs of congestive cardiac failure; the blood pressure was 115 millimetres of mercury, systolic, and 75 millimetres, diastolic. His progress in hospital was unremarkable until the eighth day after admission, when he developed continuous lower abdominal pain, which persisted for thirty-six hours. There was no change in the physical signs, the blood pressure was 125 millimetres of mercury, systolic, and 85 millimetres, diastolic, and the bowel sounds were normal. Six days later he experienced several further attacks of severe abdominal pain radiating through to the back, associated with fever, leucocytosis, tenderness in the epigastrium, and tachycardia, but without fall in blood pressure. As a result of an increased urinary diastase excretion, the attacks of pain were initially attributed to pancreatitis. However, twenty-four hours later the abdomen was distended, bowel sounds were no longer heard, and the patient's condition was deteriorating; a diagnosis of mesenteric occlusion was made. At laparotomy (Dr. R. Officer) there was infarction of the small and large bowel too extensive for resection. The patient died the following day. At necropsy old and recent infarction of the anterior wall of the left ventricle was found, with small ante-mortem endocardial thrombi. There was gross congestion, with gangrenous areas of bowel extending from a point 10 inches

from the duodeno-jejunal junction to the sigmoid colon. The superior mesenteric artery was completely occluded by an ante-mortem thrombus extending distally for four to five centimetres from its origin.

Without Demonstrable Vascular Occlusion.

CASE VI.—F., a housewife, aged sixty-five years, was known to have suffered from mitral valve disease for twelve years. She had been taking digitalis, one grain twice a day, for six months. During the preceding two months, she had experienced two attacks of "gastritis". Ten days before her admission to hospital, after a meal of crayfish and cucumber, she developed severe epigastric pain, which persisted for three and a half hours, was not colicky in nature, and was associated with diarrhœa and vomiting. She noticed no blood in either the vomitus or the stool. Three days later her abdomen began to swell and thereafter increased rapidly in size.

On examination of the patient, there were signs of mitral stenosis with slow auricular fibrillation. No abnormality was found in the abdomen, or on rectal examination.

The patient continued to vomit occasionally during her first twenty-four hours in hospital, and this was considered to be the result of digitalis intoxication. Forty-eight hours after her admission she developed a further attack of severe, constant, epigastric pain with vomiting. At this stage, the patient's sister stated that the onset of abdominal pain had been associated with a transient numbness and pallor of the left leg. A diagnosis of mesenteric occlusion was made, and laparotomy twenty-four hours later revealed gangrenous small bowel, which was resected. After the operation the patient became comatose, and she died the next day.

At the post-mortem examination the mitral valve was thickened and stenosed, and there were two ante-mortem thrombi in the left auricle. About three-quarters of the small bowel had been resected, but the remaining quarter was gangrenous. The surgical anastomosis was patent and intact. Careful dissection of the mesenteric vessels revealed no sign of embolus or thrombus in either arteries or veins.

DISCUSSION.

From the clinical histories presented, it is noticeable that three of the four patients who developed ischæmic changes without arterial occlusion had auricular fibrillation. It is perhaps tempting to assume, therefore, that the peripheral vascular lesion was due to an embolus which, by the time of the post-mortem examination, had disintegrated and become distributed throughout small peripheral branches of the main artery. This might conceivably have occurred in Case IV, and in the patient's penultimate admission to hospital in Case III, during which transient ischæmic changes developed and rapidly subsided again. It is an untenable assumption in Case II, in which the clinical picture was that of an occlusive process spreading centrally up the aorta, yet at autopsy no arterial occlusion could be demonstrated. However, this patient was found to have an extensive ante-mortem thrombus of the left femoral vein.

Peripheral gangrene following venous thrombosis has been reported, and De Bakey and Ochsner (1949) have recently discussed the mechanism of the presumed deficiency of arterial inflow. Although the reduction in pulsation and oscillometric findings in the affected limb, the contracted appearance of the artery at operation and the dramatic return of pulsations following sympathetic block which these authors observed suggest arterial spasm as the probable cause, they consider the venous block itself responsible for the gangrene; although blood enters the limb, it cannot leave it, which leads to congestion and stasis in terminal vessels, with resulting ischæmia, anoxia of the tissues and gangrene. In our patient (Case II), venous thrombosis seems an unlikely cause of the peripheral vascular lesion, because the extent of the ischæmic change was far greater than could be accounted for by a femoral vein thrombosis, and because the clinical picture was unlike that seen in *phlegmasia cerulea dolens*.

Peripheral gangrene, in the absence of cardio-vascular disease, has long been recognized as a complication of various infective conditions, including cholera (Strong, 1942), tuberculosis (Valtis *et alii*, 1948) and pneumonia (Uhr, 1938; Chatterjee, 1940; Storstein, 1951). Various hypotheses have been advanced to explain the development of gangrene in such cases. Although in some (as in the case described by Uhr) there has been thrombosis of arteries, this is not a constant finding. Storstein described incipient digital gangrene in lobar pneumonia, and attributed this to a low arterial oxygen saturation which he had noted in his patient; he suggested that anoxæmia could cause changes in the peripheral circulation comparable to those demonstrated in the pulmonary circulation (Von Euler and Liljestrand, 1946; Motley *et alii*, 1947). Anoxia has also been incriminated as the causal factor in gangrene from carbon monoxide asphyxia (McLean, 1911; Briggs, 1919; Enzer and Spilberg, 1946; Fowler, 1954).

The development of peripheral gangrene in patients with virus pneumonia is well recognized (Stats and Bullowa, 1943; Bateman, 1949), and is attributed to the presence of cold agglutinins in high titre. The finding of cold agglutinins is unusual in patients with bacterial infections and may be dismissed as an ætiological factor in most reported cases. Weiner (1950) has recently discussed the mechanism of gangrene in meningococcal infections. He considers that the symmetry of the lesions favours vascular spasm, but suggests that other circulatory disorders resulting from infections may also be concerned. These include various agglutinative or sludging phenomena of red cells (Knisely *et alii*, 1947) producing slowing of the circulation in the smaller vessels with consequent tissue damage.

The majority of patients who develop gangrene during an infection have no history of preexisting arterial disease, and, although occlusive vascular lesions have sometimes been found at autopsy, this is not invariable. It is apparent that some other explanation must be found.

The occurrence of peripheral gangrene and episodes of transient peripheral ischæmia is well recognized in patients suffering from ball thrombus or myxoma of the auricle (Abramson, 1924-1925; Evans, 1948; Evans and Benson, 1948). Fishberg (1938) considered that the symmetrical peripheral gangrene occurring in cases of ball thrombus was "angiospastic" and analogous to that in patients with congestive cardiac failure. In the latter, simultaneous pressure measurements from antecubital and jugular veins were usually equal, but occasionally in patients in the terminal stages he found a fall in antecubital and a rise in jugular venous pressure, and considered this was the result of extreme vasoconstriction due to a falling cardiac output.

Other reports (Perry and Davie, 1939; Abrahams, 1948; Swan and Henderson, 1951; Hejtmancik and Bruce, 1953) have appeared of cases of gangrene in patients with cardiac failure, in whom no vascular occlusion was demonstrated at autopsy—that is, cases similar to four of the cases (Cases II, III, IV and VI) described in this paper. The authors believe that the gangrene is due to peripheral arterial spasm, presumably resulting from the cardiac failure. This question of vascular spasm has recently been critically discussed by Pickering (1951), who concluded that, although spasm of peripheral vessels might occur (as in response to direct injury to an artery), its role had been greatly exaggerated. However, there is little doubt that a limb can become ischæmic, and that arterial pulsations can disappear, without thrombosis of the main artery.

Recently, new light has been thrown on the nature of vascular spasm by Burton (1951) and his colleagues (Nichol *et alii*, 1951), which we consider offers an explanation for occlusion without thrombosis, as in the cases which we have discussed in the preceding sections. They have shown that in vessels having active tension, for a given pressure there is a tension above which the vessel must close, and conversely, for a given tension, there is a pressure below which the vessel must close. If, with a normal pressure, the active tension should rise to a sufficient degree, the vessel will close (spasm). This may be the mechanism of closure of vessels subject to direct

irritation. If with a normal active tension the pressure is lowered, the vessel will also close, as may occur below the site of an embolus.

In the patients with advanced cardiac failure there was presumably high tension in the vessel wall, due to strong sympathetic activity attempting to maintain the homœostasis of the blood pressure in face of a low cardiac output. Thus the stage was set for critical closure.

SUMMARY.

Clinical histories are presented of patients suffering from congestive cardiac failure who developed peripheral ischæmia, some with, and others without, any demonstrable arterial occlusion.

The mechanism of ischæmia in the absence of arterial occlusion is discussed.

It is considered that this is due to critical closure of vessels in patients with a low cardiac output and high sympathetic activity.

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Reviews.

Demonstrations of Operative Surgery: A Manual for General Practitioners, Medical Students and Nurses, by Hamilton Bailey, F.R.C.S., F.A.C.S., F.I.C.S., F.R.S.E.; Second Edition; 1954. Edinburgh and London: E. and S. Livingstone Limited. 9″ × 6″, pp. 400, with 538 illustrations, a few in colour. Price: 24s.

The second edition of this book possesses all the well known and admirable characteristics of the text-books of Hamilton Bailey. There is the same simple, clear style with profuse illustrations. This edition is slightly modified to meet the requirements of undergraduate medical students as well as to introduce some recent improvements in operative and theatre technique which have been developed since the first edition. It is recommended to students and nurses. It should always be used under the supervision of an able tutor, because, being a small book on a large subject, it can present only one point of view, whereas the instrument sister must be able to accommodate herself to the ideas, indeed the idiosyncrasies, of a variety of surgeons, many of whom will not perform operations in the manner described in this book, nor will tutor sisters always agree on matters of theatre technique. The surgeon performing œsophagoscopy is wearing a cap and mask, whereas the nurse and house surgeon giving a blood transfusion wear neither mask nor cap and not even a gown. In Australia at least, this would be utterly condemned, as it should be. The dangers of various positions on the operating table are not sufficiently emphasized, particularly in relation to post-operative thrombosis in the leg veins. A suggested method for lithotomy position is quite unsound, very likely to interfere with the venous return from the leg and certain to be followed by post-operative pain.

We wonder if, in a book of this character, it is worth while trying to describe operations on the heart as has been done here. It seems that the desire to make this book suitable for both medical students and nurses has meant that it has fallen short in both ways. The operations are described in a fashion too sketchy for medical students and, from the nurses' point of view, operative details are not described in relationship to the order or manner in which the instrument sister must hand the instruments to the surgeon.

The Management of Mental Deficiency in Children, by I. Newton Kugelmass, B.S., M.A., M.D., Ph.D., Sc.D.; 1954. New York: Grune and Stratton. 9″ × 6¾″, pp. 324, with 68 illustrations. Price: $6.75.

THIS book is a very important one. At last we have an encyclopædia on mental deficiency in children written by an eminent authority who has obviously applied his great gifts to the service of children with particular intensity and devotion to those who are handicapped by mental incapacity. The subject is presented systematically in three parts dealing respectively with diagnosis, syndromes and management.

In the section on diagnosis, Dr. Kugelmass expresses his dissatisfaction with the existent classifications of mental deficiency because of the shortcomings of any attempt to simplify or group the "bewildering array of diverse disorders with intellectual inadequacy as the common denominator". He has found it useful, however, to "divide amentias into four clinical groups, namely (1) developmental, (2) metabolic, (3) neuromotor, and (4) psychological". Each of these groups has characteristic clinical accompaniments which are specified. In a splendid chapter on the complete examination of the retarded child, the author presents the specific ætiology as "an unbroken chain of cause and effect". The complete developmental history of the patient must be elicited skilfully with tact and with consideration for the feelings of the parents. The physical examination must be reinforced by a functional examination and "psychometric evaluation of abilities, proclivities, attainments, common sense, intelligence and personality".

The second part of the book occupies 172 pages and is admirably condensed and classified. The differential diagnosis of the varieties of mental deficiency is divided into thirteen leading types which are tabulated and subdivided on clinical grounds to include all the syndromes, many of which are eponymic and synonymic. Each table is succeeded by brilliant clinical descriptions of the chief component disorders, which should be invaluable to practising physicians and for teaching purposes.

In the third division of the book on the management of the actual patients we find the quintessence of wisdom, clinical ability and loving kindness of a great physician. It is subdivided into sections on training the retarded child, educa-

tion of the backward child, treatment of the mental defective and prevention of mental deficiency.

It is a pleasure and a privilege to read this book, which is marred only by typographical errors and misspellings which will be eliminated in the next edition. The author reveals his charming personality and precision. The reader is never left in doubt as to the meaning even when abstruse subjects such as defective speech are discussed. Time after time we come upon arresting phrases and aphorisms such as "the language of truth is simple", "intelligence, like fire, can only be observed in action", "the brain is the bodily organ of the mind that experiences, strives, feels, knows and thinks—activities indispensable for adaptation", and "children come through parents, not from them". And finally the book is enhanced with references, good illustrations and excellent type on good paper.

Clinical Endocrinology for Practitioners and Students, by Laurence Martin, M.D. (Camb.), F.R.C.P. (London), and Martin Hynes, M.D. (Camb.), M.R.C.P. (London), with a foreword by Lionel Whitby, C.V.O., M.C., M.D., F.R.C.P., D.P.H.; Second Edition; 1954. London: J. and A. Churchill, Limited. 9" × 5½", pp. 262, with 39 illustrations. Price: 20s.

WHEN this book appeared originally six years ago it was received with great appreciation and cordiality. The new edition deserves a similar welcome, for it contains many important assessments of advances in our knowledge of endocrinology and closely allied subjects. The whole of the text has been thoroughly revised and additional matter has been interwoven without any considerable increase in the size of the book. The excellent sectional lists of references have been brought forward to include recent books and articles; thus adequate inducement is offered to students to obtain a more comprehensive account of each subject under discussion.

Although the main purpose of the book is to provide sound practical guidance for general physicians engaged in clinical work, the essential background of scientific details is included. The clinician can thus base his treatment on the proven facts of physiology and pathology and can take an intelligent interest in research projects and the new knowledge emerging from them.

Nothing in the book is better than the description of the connexion between Cannon's "emergency" theory of adrenaline secretion, Selye's postulations on the body's reactions to stress, and the practical application of the welter of information which has accumulated on the adrenocortical hormones and allied substances. The index, good as it is, is not particularly helpful in the pursuit of these interrelationships; perhaps it has not been completely revised to include new entries.

Growth and Development of Children, by Ernest H. Watson, M.D., and George H. Lowrey, M.D.; Second Edition; 1954. Chicago: The Year Book Publishers, Incorporated. 9" × 6", pp. 296, with 69 illustrations. Price: $7.00.

THIS valuable compendium on all aspects of the physical growth and functional development of children that are capable of mensuration has proved its worth. It was reprinted within a year of publication and two years later a second revised edition has been prepared. An original omission has been rectified by the addition of a completely new chapter on facial growth and dentition supplied by two professors of dentistry at Ann Arbor. The other chapters have been amended and expanded.

Pædiatricians and others interested in the assessment and recording of the data on the physical growth of children are always faced with the problem of wise selection of a reliable method. We are offered a wide range from which to choose and two more systems are included herein. Some of us may be intrigued by the ingenuity of the mnemonic predictions of Weech's sign posts on the highway of growth, many of us already admire the percentile tables and curves of Stuart and Meredith which are used at Boston, and most of us are bewildered by the auxodromes and complexities of the Wetzel grids. It is all very difficult, but we can rest assured that if we will adopt a system and use it methodically not only shall we find it simple to work after we gain experience with it, but we shall also put ourselves into a position to express ourselves with confidence and conviction when consulted about the nutritional and developmental levels of our patients.

The chapter on the role of the endocrine glands in normal growth and development is particularly informative and a great volume of recently acquired knowledge is presented in a well-digested and assimilable form. It is summarized schematically in a figure portraying the functions of the endocrine glands related to growth and maturation and some of the factors believed to regulate their action. It is desirable, however, that the text should be read carefully with the diagram.

Fundamentals of Otolaryngology: A Textbook of Ear, Nose and Throat Diseases; Second Edition; 1954. Philadelphia and London: W. B. Saunders Company. Melbourne: W. Ramsay (Surgical), Limited. 9½" × 6½", pp. 506, with 197 illustrations. Price: £3 6s. 6d.

THE second edition of this book by Lawrence R. Boies and eight associates provides an excellent text-book for the undergraduate and the general practitioner. The author emphasizes in his preface that the work is not intended to be a reference book for the specialist. Without the sacrifice of clarity, very adequate treatment of the subject has been compressed into the book's 487 pages.

There are three parts: the first deals with the ear, the second with the nose, and the third with the throat. Each part is systematically set out in chapters devoted to applied anatomy and physiology, examination, pathological conditions and treatment. The chapters on applied anatomy and physiology and those on examination are exceptionally well illustrated and would be particularly helpful to the beginner. The subjects are presented in a balanced manner, little space being given to uncommon conditions while whole chapters are devoted to the commoner conditions such as the common cold and nasal allergy. The chapter entitled "Headache and Neuralgia of Nasal Origin" includes discussion on the mechanism of headache, a classification of headache, the facial neuralgias, and the nasal space as a source of headache and neuralgia.

A short list of references covering recent literature, mostly American, is given at the end of the clinical chapters, and at the end of the book is a useful chapter entitled "Modern Medication in Otolaryngology".

Fluid Therapy, by James D. Hardy, M.S. (Chem.), M.D., F.A.C.S.; 1954. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 9½" × 6½", pp. 256, with 77 illustrations. Price: 59s. 3d.

IT is a far cry from the cellular chemistry teachings of a decade or more ago, when it was generally accepted in many schools of thought that the cations remained on one side of the cell membrane, the anions being free to move from side to side, to the presently accepted and proven findings that both sodium and potassium can, under certain circumstances, move across this barrier.

The present theory is now a commonplace and many of the manœuvres of intravenous control are based upon this revised conception of electrolyte movements. Indeed, so many advances have been made in intravenous therapy, or, as it has come to be called, "Chemical Pathology", that the old ideas of transfusion, infusion and confusion no longer obtain. Much of what was nebulous a few years ago has been crystallized by James D. Hardy in his little monograph, "Fluid Therapy" into a generally readable and understandable book. He has borrowed freely from Gamble, Marriott, Darrow and a host of others, but his plagiarism, always forgivable in a text-book, is leavened by his own original work and observations. He mentions, with some original ideas, the intravenous use of alcohol as a provider of calories, and his method will no doubt find its way into eventual general use.

There are some obvious minor slips which should be corrected in the next edition. For example, he refers on page 100 to the overnight storage of blood prior to a potassium estimation the next morning, when he means plasma or serum. If whole blood were stored overnight, the subsequent potassium estimation would be erroneously high.

Again, on page 186, he refers to "Trocar" when he means "Cannula".

There are some surprising omissions. In the chapter on shock the classical work of Scudder is not even mentioned, and in discussing shut-down renal failure the now commonly practised Bull regime is not considered, although several pages are devoted to peritoneal lavage and artificial kidneys. Again, in discussing tetany, the author fails to point out the relationship of calcium and potassium; how, if calcium and potassium levels are both depressed in a state of metabolic alkalosis, tetany will not be manifest, but will at once show itself if the potassium content is restored to normal (or raised) while that of calcium remains low—a trap for the unwary.

In general, with some minor shortcomings, the book is good. Many surgeons and some physicians would appreciate the essence of intravenous therapy in the small, though incomplete, compass, condensed from countless articles on this fascinating subject.

Notes on Books, Current Journals and New Appliances.

World Distribution of Leishmaniasis: Basic Sources. By the Department of Medical Geography, American Geographical Society; 1954. New York: American Geographical Society. 38" × 25". Price: $1.25 folded, $1.50 flat.

THIS constitutes Plate 14 of the Atlas of Diseases. It consists of six sectional maps showing population densities and the distribution of kala azar, oriental sore and American leishmaniasis. Relevant climatic data are included, and the distribution of vectors is listed. In the explanatory notes, epidemiology is briefly discussed. An extensive bibliography, conveniently arranged by countries, is printed on the back. All the important information about these diseases is readily available at a glance.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Stammering: Its Cause and Cure", a supplement to "Stammer is not Nerves", by H. V. Hemery, L.R.A.M.; 1955. London: The School for Functional Speech Disability. 8½" × 5½", pp. 24, with five illustrations.

This supplement has been prepared in order to record the answers to some questions put to the author by students.

"The Year Book of Urology" (1954-1955 Year Book Series); edited by William Wallace Scott, M.D., Ph.D.; 1955. Chicago: The Year Book Publishers, Incorporated. 8" × 5¼", pp. 372, with 83 illustrations. Price: $6.00.

One of the "Practical Medical Series of Year Books".

"Maternal Emotions: A Study of Women's Feelings toward Menstruation, Pregnancy, Childbirth, Breast Feeding, Infant Care, and Other Aspects of Their Femininity", by Niles Newton, Ph.D.; 1955. New York: Paul B. Hoeber, Incorporated. 9¼" × 6¼", pp. 152. Price: $3.00.

This book is described as a psychosomatic medicine monograph; the author hopes that it may be of some value to those interested in helping women to have better and more satisfying lives.

"The Lung: Clinical Physiology and Pulmonary Function Tests (Based on the 1954 Beaumont Lecture)", by Julius H. Comroe, junior, M.D., Robert E. Forster II, M.D., Arthur B. Dubois, M.D., William A. Briscoe, M.D., and Elizabeth Carlsen, A.B.; 1955. Chicago: The Year Book Publishers, Incorporated. 9¼" × 6", pp. 228, with 57 illustrations. Price: $5.00.

This book has "one purpose—to explain in simple words and diagrams those aspects of pulmonary physiology that are important to clinical medicine".

"Methods of Biochemical Analysis", edited by David Glick; 1955. New York: Interscience Publishers, Incorporated. London: Interscience Publishers, Limited. Volume II. 9" × 6½", pp. 476, with 46 illustrations. Price: $9.50.

There are thirteen chapters written by seventeen contributors.

"The Abnormal Pneumoencephalogram", by Leo M. Davidoff, M.D., and Bernard S. Epstein, M.D.; Second Edition; 1955. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson. Limited. 10" × 7¼", pp. 518, with 696 illustrations. Price: £8 1s. 3d.

Intended for all who are interested in neurological diagnoses.

"Fractures in Children", by Walter Putnam Blount, A.B., M.D., F.A.C.S.; 1954. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 10" × 7", pp. 290, with 311 illustrations. Price: £5 2s. 3d.

Reflects the experience over more than twenty years of members of the fracture service of the Milwaukee Children's Hospital.

"Primary Anatomy", by H. A. Cates, M.B., and J. V. Basmajian, M.D.; Third Edition; 1955. Baltimore: The Williams and Wilkins Company. Sydney: Angus and Robertson, Limited. 10" × 7", pp. 358, with 443 illustrations. Price: 62s.

The first edition was published in 1948.

"Psychoanalysis: Practical and Research Aspects", The Abraham Flexner Lectures, Series Number Twelve, by Willi Hoffer, M.D. (Vienna), Ph.D. (Vienna), L.R.C.P., L.R.C.S. (Edinburgh), L.R.F.P.S (Glasgow); 1955 Baltimore: Published for Vanderbilt University by The Williams and Wilkins Company Sydney: Angus and Robertson, Limited. 8" × 5½", pp. 112. Price: 37s. 9d.

The author is editor of *The International Journal of Psycho-Analysis.*

"A Manual of Oral Embryology and Microscopic Anatomy", by Dorothy Permar; 1955. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 10¼" × 7", pp. 110, with 49 illustrations. Price: 40s. 6d.

Intended for use by the student of dental embryology in conjunction with lectures or discussion periods.

"Essentials of Orthopædics", by Philip Wiles, M.S. (London), F.R.C.S. (England), F.A.C.S.; Second Edition; 1955. London: J. and A. Churchill, Limited. 10" × 6½", pp. 554, with 400 illustrations. Price: 55s.

The first edition was published in 1949.

"Pædiatrics for the Practitioner", edited by Wilfrid Gaisford, M.D., M.Sc., F.R.C.P., and Reginald Lightwood, M.D., F.R.C.P., D.P.H.; 1955. London: Butterworth and Company (Publishers), Limited. Sydney: Butterworth and Company (Australia), Limited. Volume III. 10" × 7", pp. 682, with 159 illustrations. Price: £17 10s. for set of four volumes.

Volume I was reviewed in this journal on September 25, 1954, and a review of Volume II will shortly appear.

"The Living Brain", by W. Grey Walter, M.A., Sc.D.; 1953. London: Gerald Duckworth and Company, Limited. 9" × 5½", pp. 228, with 23 illustrations. Price: 15s.

The author comes from the Department of Physiology of the Border Neurological Institute, Bristol.

"The Liver and Cancer: A New Cancer Theory", by Kasper Blond, M.D., F.I.C.S., with a foreword by E. Stanley Lee, M.S., F.R.C.S.; 1955. Bristol: John Wright and Sons, Limited 8½" × 5½", pp. 232. Price: 27s. 6d.

The author's theory is an elaboration of the ideas put forward in his previous book, "The Liver (Porta Malorum)"

"Textbook of Medicine for Nurses", by J. W. Joule, M.D., M.R.C.P.; Second Edition; 1955. London: H. K. Lewis and Company, Limited. 9" × 6", pp. 538, with 62 illustrations. Price: £1 7s. 6d.

The first edition appeared in 1952.

"World Distribution of Leishmaniasis: Basic Sources", by the Department of Medical Geography, American Geographical Society; 1954. New York: American Geographical Society. 38" × 25". Price: $1.25 folded, $1.50 flat.

This is number 14 of the atlases published by the American Geographical Society.

"Man in a Cold Environment: Physiological and Pathological Effects of Exposure to Low Temperatures", by Alan C. Burton, Ph.D., and Otto G. Edholm, M.B., B.S.; 1955. London: Edward Arnold (Publishers), Limited. 8½" × 6", pp. 288, with 75 illustrations. Price: 30s.

This is one of the "Monographs of the Physiological Society".

"Antibiotic Therapy in Medical and Veterinary Practice (for Students and Practitioners)", by M. L. Gujral, M.B., M.R.C.P. (London); 1955. Calcutta: Scientific Publishing Company. 9" × 6", pp. 170, with ten illustrations. Price: 18s.

Intended for students and practitioners.

The Medical Journal of Australia

SATURDAY, JULY 16, 1955.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words of phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

CHLORPROMAZINE, RESERPINE AND CHRONIC MENTAL ILLNESS.

THE hospital of St. Mary of Bethlehem, in London, which was founded as a priory in the thirteenth century, was converted to a lunatic asylum in the middle of the sixteenth century, and so through a corruption of Bethlehem gave the world the significant word Bedlam. In this word is summed up the frankly distressing picture, all too often presented by the chronically mentally ill, where reason is a prisoner and wild disorder reigns. The management of this state of affairs has in the past reflected little credit on civic authorities, the medical profession or the community in general. For a long time the grossly mentally deranged were treated as subhuman, were subjected to all manner of cruelty and indignity, and aroused in the casual onlooker fear, derision or amusement more often than pity. In more recent times their care and management have become more rational and humane, even if not politically favoured. Effective treatment, however, has remained a major problem; and it is a relief to see light now appearing on the horizon. Such modern, if largely empirical, forms of treatment as the various types of convulsive therapy and leucotomy have undoubtedly made a difference, and in certain cases have effected a startling transformation. Now we have encouraging results reported from the use of chlorpromazine and reserpine. The striking papers appearing in this issue, one from New South Wales, by David R. Morgan, and two from Victoria, by K. Andermann and J. S. B. Lindsay, and by H. M. Bower, report worthwhile work in this field, following closely upon that reported overseas.

Chlorpromazine has been used (in Western medicine) for a slightly longer time than reserpine and has gained more prominence. A number of important papers on it have appeared during the last twelve months in England and America, following on earlier work on the Continent. J. Lomas[1] reported a study of 205 patients treated with chlorpromazine. The first of his patients to be treated were seriously disturbed chronic psychotics, but as the efficacy of the drug became more apparent the field of application was steadily widened to include every type of patient catered for by a large mental hospital. Lomas states that results in the different diagnostic categories suggest that chlorpromazine may play a useful part in the treatment of patients with acute states of excitement of all sorts, of neurotics in whom tension or anxiety is a prominent symptom, and of some depressive patients for whom electroconvulsive therapy has proved ineffective. The most striking results, however, were obtained in the treatment of chronic psychotic patients for whom the prognosis would normally have been very bad. It enabled a few of these patients to be discharged from hospital and many more to make a good hospital adjustment. Lomas states that amongst chronically ill patients it was felt that the chief part played by chlorpromazine was to make possible the rehabilitation of those for whom this was formerly impossible, and that while in some instances relapse occurred immediately the treatment was stopped, in others improvement still continued. The effect produced on overactive and on inhibited patients differed little. It is interesting to note that results obtained in patients who had previously undergone leucotomy without notable success were as good as those obtained in other chronically ill patients; on the other hand four patients who failed to respond in any way to chlorpromazine have made a very good immediate response to leucotomy, though it remains to be seen whether this will be maintained. C. P. Seager[1] reports a controlled experiment in which each patient acted as her own control. A total of 46 elderly psychotic women were treated with chlorpromazine, and 33 achieved some degree of improvement in their mental state and general behaviour, though this improvement was not uniformly good. Most of them became more manageable, with few noisy outbursts or demonstrations of violence, and were able to feed and dress themselves. No patient in the group was considered fit for discharge from hospital, although two have been going out with relatives for week-ends, and a number have become employable and able to take part in social activities. The important point is that comparable results had not previously been obtained with other forms of treatment. Seager stresses the value of chlorpromazine in the treatment of restlessness following fractures in elderly patients. Restlessness is rapidly controlled, so that adequate operative and splinting technique may be carried out. At the same time it should be appreciated that for elderly patients with their susceptibility to fractures, the unsteadiness or drowsiness caused by chlorpromazine may well lead to a fall and so to fracture; and, as Seager rather wryly points out, it is little consolation to know that the drug is effective in the treatment of the condition it has helped to cause. For this reason patients must be encouraged to rest for some considerable time after they have received their tablet, and the dosage should be the least that will produce the desired therapeutic effect.

[1] *Brit. M. J.*, April 9, 1955.

Another paper of major importance is that of G. F. Vaughan, D. M. Leiberman and L. C. Cook.[1] This covers the treatment with chlorpromazine of 224 female patients suffering from recent and chronic neurotic and psychotic states, together with 24 controls. They were in two groups. The first consisted of 200 patients, some psychotic and some neurotic, typical of the patients under treatment in the hospital. Patients who responded favourably were placed on placebo tablets for a month, and the effect was noted. Then either the active tablets were administered again or, if improvement was still maintained, the treatment was discontinued. The second group, of 48, were selected largely because they were restless and agitated and showed psychomotor excitement. In this respect they formed a sample of the most chronic and intractable of the hospital patients and were unpromising from the therapeutic point of view. By random selection 24 were treated with chlorpromazine and 24 were given a placebo. Of the first group of 200 patients, 124 (62%) are described as manifesting improvement, 56 (28%) showed much improvement or were symptom-free, and 76 (38%) showed no improvement. Vaughan, Leiberman and Cook point out that this assessment was made on the most stringent grounds, and is of more value when it is appreciated that the majority were "chronic" hospital patients. Patients with manic symptoms either responded very well or were completely refractory, and all good reactions occurred as early as the first week or so. Apart from these, the most dramatic responses to chlorpromazine were in the schizophrenic group. The main feature of the action of chlorpromazine on the chronic schizophrenic is stated to be the improvement in his ability to enter into activities previously impossible. This is of immense benefit and can rapidly lead to a complete change in the character of a "chronic ward". It is described as comparable to the remarkable effects produced in suitable cases by maintenance electroconvulsive therapy. The overall conclusion from this study is that chlorpromazine effectively controls the symptoms of psychomotor over-activity, aggressiveness, agitation and psychotic tension, and is particularly valuable in the treatment of chronic over-active deteriorated schizophrenics, patients with mania and with schizophrenic excitement, and patients who are unsuited for electroconvulsive therapy or who relapse after an initial improvement. The drug is not regarded as a substitute for electroconvulsive therapy or other forms of physical treatment when these are indicated. However, judiciously applied, it can "entirely alter the atmosphere in wards where aggressive and agitated patients are treated".

Vaughan, Leiberman and Cook, as well as many other observers overseas, seem to have encountered more toxic reactions to chlorpromazine than the Australian investigators. Deaths have been reported from liver damage causing jaundice and from agranulocytosis, and Vaughan, Leiberman and Cook state that of their 224 patients 22% developed sufficiently severe complications to make it necessary to stop treatment, although in ten cases treatment was subsequently restarted without further complications. The complications encountered in the use of chlorpromazine have been made the subject of a separate study by J. Lomas, R. H. Boardman and M. Markowe.[1] This covers the observation of 800 patients treated with chlorpromazine. The complications are divided into side effects and toxic reactions. It is stated that of the side effects hypotension is the only one requiring special precautions, and then only in the aged and those with cardiovascular dysfunction. Jaundice, blood dyscrasis, skin reactions and œdema, pyrexia and epileptic fits all occurred as toxic manifestations. Of these, jaundice and blood dyscrasias may prove fatal and are regarded as being absolute contraindications to the continuance of treatment with chlorpromazine. Previous liver dysfunction may predispose to jaundice and therefore should also be regarded as a contraindication to such treatment. With the exception of epileptic fits, the time of occurrence of all toxic manifestations had a definite relationship to the duration of treatment, but not to the dosage at the time or to the total dosage of chlorpromazine. In view of this finding and the occurrence of eosinophilia in some cases, the toxic reactions are regarded as being probably due to sensitization. Whatever their basis, the complications of chlorpromazine need to be borne in mind, and taken into account as assessment of the value of the drug proceeds.

Reserpine has come into prominence mainly for its hypotensive effect, but it is known that *Rauwolfia serpentina*, the Indian plant from which the alkaloid reserpine is derived, has been used for centuries in India for the treatment of patients suffering from mental disorder. R. H. Noce, D. B. Williams and W. Rapaport[2] quote a report presented in 1953 by an Indian psychiatrist, R. A. Hakim, in which he claimed a recovery rate of 51% in 146 mentally ill patients from the use of various rauwolfia preparations and recovery in 80% when rauwolfia was combined with electroconvulsive therapy. Noce, Williams and Rapaport make the comment that results such as these naturally arouse both interest and scepticism, as well as a desire to investigate the agent responsible. Having reacted in this way, they now describe their results, after seven months' experience of treatment with reserpine, as "dramatic". Their patients were made up of 74 who were mentally ill and 15 who were mentally retarded. All their patients were given reserpine by mouth in an average daily dosage of two milligrammes; many also had parenteral injections. From their experience to date, Noce, Williams and Rapaport believe that about 80% of psychiatric patients show improvement that is attributable to reserpine. Depressed patients become alert and sociable, while those in the hypoactive, noisy, assaultive group become tranquil. The use of restraints, seclusion and electroconvulsive therapy has decreased by at least 80% since the study began. Remissions have been produced in 20 patients, and eight have been discharged from hospital. The response of four of the mentally retarded patients has been so encouraging that study in that area is being expanded. Side effects have been infrequent and minor despite the use of reserpine in high dosage. Noce, Williams and Rapaport do not suggest that reserpine is a panacea for the treatment of the mentally ill and mentally retarded; however, the response of these patients has been so promising that they urge other investigators to evaluate

[1] *Lancet*, May 28, 1955.

[1] *Lancet*, June 4, 1955.
[2] *J.A.M.A.*, October 30, 1954.

the drug in all types of mental disease. They go so far as to state that if the results of long-term studies substantially confirm these preliminary findings, reserpine will be the most important therapeutic development in the history of psychiatry. This is, of course, a very enthusiastic statement which many people will accept with reserve; but it must be conceded that the views of Noce and his colleagues receive considerable support from Morgan, and to a lesser extent from Bower, and also from E. S. Foote[1] in a report of the treatment of a group of 32 chronically mentally disturbed patients with reserpine for periods of up to five months. Foote states that considerable improvement was noted in the habits and personal appearance of the great majority of his patients and in their ability to occupy themselves. Impulsiveness and incontinence disappeared. A marked quietening effect was noted, and even patients with definite signs of dementia showed superficial improvement. Some of the individual case histories are striking. One patient, the most destructive in the hospital, had destroyed on an average one blanket a night and one mattress a week, and had started to gnaw the wood on his bed. He became clean and tidy and lost his destructive habits within four days of being given treatment with reserpine. Foote states that the main difference in the patients treated with reserpine, apart from the disappearance of their antisocial behaviour, was their receptiveness to ideas and suggestions, whereas previously such suggestions had had no effect. A good deal of prompting was needed to start occupational therapy and to improve table manners; but once the idea was accepted by the patient, the improvement was maintained. Appetite was greatly increased, and difficulties with feeding disappeared. Many patients now enjoy cinema shows, patients' dances and other recreations, whereas previously they were not thought suitable for such activities. Side effects were slight and occurred in only a few cases. Foote states that most patients who are going to respond show signs of this within a week or two, but some were receiving the drug for three months before definite improvement was noted. It is therefore suggested that, unless the patient's condition deteriorates, the method should be given at least three months' trial.

It is difficult to foretell at this stage what will be the ultimate view of these new drugs in the treatment of chronic psychotic patients, but there seems little doubt that directly or indirectly they have achieved some remarkable results amongst the worst type of patients, whose prognosis has been regarded as largely hopeless. While few have been returned to a condition anything like normal, a great many have been freed from the grosser manifestations of their mental disorder. This, apart from its benefit to the patient, has meant much to the nursing staff, whose work amongst such patients is full of difficulties and is frankly and understandably refused by a great many nurses. The greater tractability of the patients and the improved state of affairs in the wards must in turn lead to more satisfactory nursing, and so further benefit to the patients. Other patients are relieved of the upsetting influence of their more noisy ward mates, and the whole picture encourages one, as Foote suggests, to hope that such patients may in future be nursed in better wards with greater amenities. The change in the position of the nursing staff needs to be stressed. Morgan comments on it with some feeling, and we find comparable statements in many of the other articles already quoted. Noce and his colleagues report that the morale of the ward employees has improved considerably and that they have assumed a positive optimistic approach to the further training and treatment of these mentally retarded patients. Foote states that the change in the nursing staff's work is most pronounced; instead of custodial care there is now considerable scope for active rehabilitation with, as a result, increasing interest and enthusiasm in the work. More than that, Vaughan, Leiberman and Cooke have found that the patients' relatives have a new interest in the patients' welfare, and this is a further indirect help in their social recovery. Chlorpromazine and reserpine undoubtedly have their drawbacks, their action in many cases has been disappointing, and it seems clear even at this early stage that they will not supplant certain of the other recently introduced forms of treatment. Nonetheless, they have helped to bring the light of hope into a confused and ugly darkness. Bedlam no longer reigns undisputed in his ancient kingdom.

[1] *Brit. J. M.*, May 14, 1955.

Current Comment.

SURGICAL PREPAREDNESS FOR CATASTROPHE.

AMERICAN FIGURES for the survival of soldiers wounded in battle present an impressive perspective. Considering only those who survived initial injury long enough to receive medical care, we find that in the American Civil War 14% died, in World War I% died, in World War II 4·5% died, while in the Korean War only 2% died. But behind these figures lies another set—immediate treatment on the battlefield with plasma expanders, and rapid methods of evacuation of wounded, resulted during the Korean War in the arrival at advanced hospitals of great numbers of patients with injuries of extreme severity—men who in earlier campaigns would not have reached the hospitals alive. Consequently, the figures given above represent an even greater achievement than their face value indicates. The recent advances which have made this achievement possible can, and must be, incorporated in plans for the care of civilians in the event of atomic bombing raids—this is the point of view adopted by I. S. Ravdin and M. A. Casberg[1] in their article entitled "A Second Look at Surgical Care in Major Catastrophes". They contend that, for an undetermined period of time, the world will be living under the constant shadow of total war, and that preparations for handling casualties from a sudden atomic attack must be perfected. They point out that there will be large numbers of casualties, and that there will be no time for fine discrimination about such things as shock, for instance. Whether or not a low blood pressure following injury, without other signs, is a certain indication of shock, it will be the safest general rule in mass emergencies to regard a systolic blood pressure of 100 millimetres of mercury or less as indicative of moderate shock, and of 60 millimetres or less as indicative of severe shock. When shock is thus diagnosed, plasma expanders and blood should be given promptly. To this end, first-aid classes should be taught to take blood pressures and to administer blood and plasma expanders. In the face of large numbers of casualties there would be no time for typing and cross-agglutination, so that large amounts of low-titre type O blood must be stored. A safe general rule, considering the limitations of plasma

[1] *Am. J. Surg.*, April, 1955.

expanders, would be to give two pints of blood for every pint of expander. Finally, it is essential to remember the lesson learnt in Korea that massive amounts of blood, of the order of 20 pints and more, can resuscitate severely injured patients suffering from serious shock.

These authors mention the desirability of providing civilians with plastic vests of the type used in Korea, but this seems impractical—to visualize a whole population wearing eight-pound vests as partial protection against a possible surprise raid by atomic bombers is too difficult. Their reminder that rapid evacuation of wounded to hospital in Korea played a large part in saving life is more useful, but possibly they could have gone a step further. In Korea, soldiers wounded in battle could not be treated in the actual presence of the enemy, and they had to be moved some distance to established hospitals. This is relatively simple, compared with what might happen—strategic atomic bombing is a vital blow at the war effort, not a preliminary to immediate occupation; the blow delivered, the survivors will be left to their own resources for a relatively long time. It is obvious that a large bomb would be wasted on any target but a large industrial area or a crowded centre of population. The total holocaust of such a bombing would consume most of the doctors, the largest hospitals, the central blood banks, and the nerve centres of organization, medical as well as other branches. At some unguessable distance out, there will be a zone with injured people who can be salvaged, and further out there will be an undamaged zone. Help for the injured will have to come from the undamaged zone. There will be no enemy troops to hinder the giving of attention to the injured on the spot, but there will be worse—"hot" radiation—radioactive particles everywhere, embedded in the skin of the patients, contaminating their wounds, and on everything, everywhere. The rescuers will need to wear protective clothing which can be removed, and with it the radioactive matter which it will pick up, and will need to wear detectors which will warn them when they have been subjected to the maximum safe amount of radiation, so that they can retire before themselves becoming casualties and adding to the burden of the other rescuers. The patients will have to be staged through decontaminating stations—conceivably many will be so "hot" that they would harm those working on them, and put them out of action too. Thereafter, a normal routine could operate, with the added necessity of watching for and treating radiation sickness. If atomic bombing comes, this will be the picture, or something very like it. If preparations are necessary, then let us store our low-titre O type blood, and train and equip our first-aid classes, and prepare our rescue and decontaminating equipment; but let us be realistic. The only type of organization likely to be available after a blast, and able to cope with the situation, would be a wide network of depots surrounding the only four or five worthwhile targets in the country, at a respectful distance.

BODY ARMOUR.

WHEN the barbarians overran Europe for the first time, the Roman legionary and his armour disappeared, and when international hostilities again became satisfactorily organized, armour had to be reinvented. The leather jerkin, the leather cuirass, and quilted and padded fabric, with the addition of metal helmets, served for a time. In 1300 there was a guild of linen-armourers in London, and a little later the Taylor's Company was providing fabric armour. Gradually metal rings and plates were incorporated, until by 1400 knights were completely encased in cumbrous articulated plate metal. From 1550 the armourer's art declined, and by 1700 firearms had driven armour out of use. Probably the only survivor of the old armourers is a London firm which still supplies fine mailed vests, made-to-measure.

In World War I the steel helmet reappeared; the Germans tried some cumbersome metal vests for the foot soldiers, while the tank appeared as a substitute for the mailed knight. Then, with the development of plastics, multilayered nylon vests were developed for the United States Army in Korea, while the marines wore plate mail vests of fibre glass. These vests, weighing only some eight pounds, were of real value. M. C. Spencer and R. V. Greive,[1] discussing the management of arterial injuries in battle casualties, attribute to the vests the fact that so few injuries to axillary and subclavian arteries (five in a series of 97) were encountered, and state that the vests were highly effective in stopping low-velocity fragments from grenades and mortar shells. I. S. Ravdin and M. A. Casberg[2] state that vests lessened the severity of wounds from small arms fire, and that 68% of all missile hits were deflected by them.

Moreover, the use of these vests resulted in the paradoxical situation that patients with exceptionally severe injuries to their limbs were treated in far greater numbers than ever before—the explanation being that in such incidents as shell-bursts at close quarters, which would normally cause extensive fatal wounding of the whole body, the vest protected the trunk while the limbs were left exposed. As a consequence, new techniques in traumatic surgery were developed in the advanced hospitals, artery banks had to be improvised, and the insertion of arterial homografts replaced ligation and amputation in most instances; the policy of attempting to salvage limbs by this method on every occasion achieved a saving of 67% of amputations in the cases reported by Spencer and Greive.

So it is not really such a far cry from Crecy to Korea in the matter of armour, although, on reflecting that the only statistics collected after that ancient battle concerned the number of "persons of gentle blood" who fell, the medical statistics for the Korean War reflect how great has been the change in the care of the common soldier.

TREATMENT OF HÆMORRHAGIC SHOCK.

MASSIVE TRANSFUSIONS have been shown to be necessary to save life in severe battle casualties; the trend has been to replace all lost blood, and the reports of even 40 pints, and more, having been given concern, of course, patients with uncontrolled blood loss, in whom resuscitation was necessary before operative control could be attempted. These massive, rapid transfusions were merely a way of maintaining input over loss by an approximation to the normal volume. When there is severe shock due to the loss of a finite amount of blood, with no further loss going on, the situation is quite different. An article by F. N. Gurd and C. M. Gardner[3] offers some useful data on this aspect of transfusion. These authors survey recent work on shock, and emphasize the importance of myocardial failure as a factor in the terminal stage of that condition, and the effect of increased coronary flow in combating it, but point out that there is no advantage in intraarterial transfusion over intravenous transfusion, provided the latter is carried out at the same rate as the former. The authors' own work shows that a rate of five millilitres per kilogram per minute into a vein can be maintained for a time without its causing any increased tendency to pulmonary congestion or apparent heart failure. There comes a point in pressure transfusion, however, beyond which rapid transfusion must not be continued, lest congestive heart failure rapidly supervene.

Briefly, when there is severe hæmorrhagic shock with myocardial failure, rapid transfusion under pressure is needed to restore the coronary circulation. With rapid transfusion there is an initial rise in venous pressure which rapidly reverts to normal as the arterial pressure rises in parallel with the myocardial recovery. But at a stage when some 75% of the volume of shed blood has been restored, there occurs a secondary rise of venous pressure and a synchronous fall in arterial pressure which signals that the myocardium has been given all the blood that

[1] *Ann. Surg.*, March, 1955.
[2] *Am. J. Surg.*, April, 1955.
[3] *Am. J. Surg.*, April, 1955.

it can cope with; if rapid transfusion is persisted with beyond this point, congestive heart failure will rapidly develop. If this point is actually reached, transfusion must be stopped immediately. It makes no difference whether pressure transfusion is given intravenously or intraarterially—the same phenomena occur. The authors consider that the originally expressed superiority of intra-arterial transfusion depended on the fact that rapid flow under pressure was contrasted with slow gravity flow into a vein, and that when rapid intravenous transfusion can be used, it is free from the dangerous side-effects of intra-arterial transfusion, and is equally effective. They also point out that the giving of multiple streams of blood into various suitable veins with ordinary ball-valve hand pumps is advantageous, and suggest the use of the external jugular vein, which is rarely collapsed, and will take a large-bore needle safely; similarly, the femoral vein can be used. It is satisfactory to have at least something definitive on the question of rapid transfusions, and to have actual experimental evidence to settle the controversy about the relative merits of the intravenous and intra-arterial routes.

SOME COLLATERAL BENEFITS OF RAUWOLFIA.

DURING the course of a study of the effects of reserpine on 76 patients with arterial hypertension, J. Genest, L. Adamkiewicz, R. Robillard and G. Tremblay[1] noticed that one patient who also suffered from long-standing psoriasis experienced almost complete relief from her skin condition after five weeks' treatment. Thereupon they used reserpine on a further 14 patients suffering from severe psoriasis, and found that six showed decrease or disappearance of itching and diminished redness and thickness of the plaques, but no further improvement; two suffered relapses. The remaining eight showed improvement from 50% to 95%, and some maintained this improvement after cessation of treatment. Large doses for at least two months were necessary.

In some 19 of the hypertensive patients, increased appetite and weight were noticed. The authors then chose three subjects who were normal in every respect except for excessive leanness. All three, while taking one milligramme of reserpine daily, put on weight, and retained it for varying periods after cessation of the drug; repetition of the treatment maintained the gain or recouped recurrent loss.

Quite often it has happened that investigators have observed incidental side-effects during their work, and have not bothered to record them, being fixed too firmly on their main line of research. Here, on the other hand, we have some busy workers who even take time to test their observations well enough to indicate for others a promising line of study which seems to be well worth following up.

TETANUS PROPHYLAXIS.

BASED on recent investigations into the immunity conferred by tetanus toxoid, in which it was shown that most individuals who have been actively immunized retain a measurable level of tetanus antitoxin in their serum for at least eleven years, and that they all respond actively and rapidly to booster injections, a plan for prophylaxis of tetanus to meet all situations has been proposed by Edward S. Stafford.[2] He suggests that for patients who have received injuries which could be complicated by tetanus the following routine procedures should be carried out: (i) Removal of all devitalized tissue and foreign material. (ii) To patients known to have received basic immunizing injections of toxoid, the administration of a booster injection. (iii) Division of all other patients into two categories: (*a*) those not sensitive to horse serum, to whom 1500 units of antitoxin should be given, and (*b*) those who are sensitive to horse serum, to whom tetanus toxoid should be given; they are then observed carefully for three weeks, and if they develop signs of tetanus, they should be treated with serum of high titre drawn from immunized donors. Thereafter they should have two further injections of toxoid to complete their immunization.

Stafford offers a very pertinent reminder: that there is no particular reason to suppose that tetanus antitoxin inhibits the growth of *Clostridium tetani* in the body, or its production of toxin; it only neutralizes toxin, and its value is in staving off the deleterious effect of toxin until the body can develop its own active immunity against the current infection. If the antitoxin is expended or excreted before immunity develops, then clinical tetanus will occur: excretion of antitoxin during a reaction in a person sensitized to horse serum is much increased, so that apart from the danger of a severe allergic reaction *per se*, any antitoxic value of injecting such patients would be much reduced—hence the desirability of using human serum for sensitive patients.

The work of Stafford and his colleagues and his exposition of their conclusions suggest that this simple scheme for tetanus prophylaxis has much to commend it.

THREADWORMS.

ALTHOUGH it is true that a diet with a low carbohydrate and a high protein content discourages *Enterobius vermicularis*, there are few families who can afford to eliminate from their children's diet the carbohydrate staples, and replace them with a satisfying quantity of protein foods—to order such a diet is as a rule as impracticable as ordering a "change of climate" or a "sea voyage" used to be. In practice, it is essential to have a reliable vermifuge or two to fall back on. Piperazine hexahydrate seems to have been producing much better results than diphenan; now E. H. Laughlin and W. G. Mullin[1] state that crystalline oxytetracycline, given for seven days in doses of one gramme daily to children less than five years old, 1·5 grammes daily to children between five and ten years old, and two grammes daily to older children and adults, is still more efficient than piperazine. Actually, current reports vary somewhat, but even if oxytetracycline is no better than piperazine, it at least provides an alternative, if needed, especially in cases in which piperazine causes nausea. Oxytetracycline has also been reported as causing nausea, but it is found that this is avoided if it is taken with milk instead of water.

SNAKEBITE REMEDIES.

SPECIFIC ANTIVENENES are not always successful in the treatment of snakebite, and various other agents have been reported as being of value. W. H. A. Schöttler[2] has conducted a series of controlled animal experiments to test these agents against two types of snake venom, one a neurotoxic venom devoid of local activity, the other a depressor venom which causes severe local damage. He found that subcutaneous application of "Phenergan", ACTH, cortisone, hydrocortisone and procaine in mice and guinea-pigs previously or simultaneously injected with these venoms showed no evidence of a beneficial effect of any of these substances. Higher, sublethal doses of "Phenergan" enhanced the toxicity of the depressor venom. The author's conclusion is that none of these drugs is likely to replace antivenene in the treatment of snakebite, and that antihistamine is even contraindicated. He points out that reports of their successful use concern single cases in which there was no means of ascertaining the initial effectiveness of the snake bite or the amount of venom injected. It would seem that his controlled experiments constitute a definite indication for the avoidance of the drugs tested.

[1] *Canad. M. A. J.*, April 1, 1955.
[2] *Surg., Gynec. & Obstet.*, May, 1955.

[1] *Internat. Rec. Med. & G. P. Clinics*, March, 1955.
[2] *Am. J. Trop. Med. and Hyg.*, November, 1954.

Abstracts from Medical Literature.

DERMATOLOGY.

Erythema Multiforme Exudativum.

D. A. MAURIELLO (*J.A.M.A.*, December 18, 1954) states that *erythema multiforme exudativum* (Stevens-Johnson syndrome) is an acute, febrile, self-limiting process manifested by lesions of the mucous membranes, mainly dermatitis, conjunctivitis, stomatitis and urethrobalanitis. In his series the dermatitis occurred as erythematous, papular or vesicular lesions of the iris type. After rupturing, the vesicles became crusted. Three of the patients had pneumonia. Treatment consisted of giving symptomatic relief and of preventing eye complications by the use of wet soaks and bacitracin ointment. Two patients received chlortetracycline; the basic disease process was not affected in either case. Systemic penicillin therapy was used routinely when cortisone or ACTH was employed. Six patients received corticotrophin (ACTH), three of these by the intravenous drip method in a dosage of 20 milligrammes daily. Two patients received ACTH intramuscularly in an amount starting with 15 milligrammes four times daily and reduced to one dose daily after the third day. ACTH did not appear to alter the course of the disease. Cortisone was given to two patients; the course of their illness did not differ greatly from that of six patients who did not receive steroids. Although death and serious eye complications sometimes occur, all the patients in this series recovered completely. The differential diagnosis between diphtheria, the toxic erythemas, infectious mononucleosis, pemphigus and the exanthems is relatively easy if Stevens-Johnson syndrome is kept in mind. Since no single specific cause is known, the cause is speculative. There seems to be a clear relationship at times to drugs such as aspirin, barbiturates, sulphonamides and phenolphthalein. At times the systemic manifestations and the clinical course suggest an infectious process. The viruses of foot and mouth disease, mumps, psittacosis, "atypical" pneumonia and *herpes simplex* have been suspected in this line. Womack and Randall succeeded in isolating a virus. The respiratory symptoms may present themselves early. Finland reported four cases in 1948, in three of which the patients died. These were patients with a severe bullous type of *erythema multiforme*.

Granuloma Annulare.

A. L. WELSH (*Arch. Dermat. & Syph.*, October, 1954) states that nine patients with *granuloma annulare* (five females and four males) received massive doses of vitamin *E* combined with pantothenic acid derivatives. Diagnosis was confirmed in seven cases by biopsy. The daily dosage of pantothenic acid derivatives varied from five grammes in children to ten grammes in adults. Daily dosage of vitamin *E* varied from 0·3 gramme in children to 1·25 grammes in adults. No complications and no reactions attributable to therapy were evident. In eight cases the condition cleared completely.

Discoid Lupus Erythematosus Following Trauma.

B. L. SCHIFFARD AND A. B. KERN (*Brit. J. Dermat.*, October, 1954) state that MacLeod in 1924 considered the causation of *lupus erythematosus* under the headings of three main theories which had characterized the trend of opinion in chronological order, to that time: (i) the local theory, (ii) the tuberculous theory, and (iii) the toxic or septic theory. He discounted the tuberculous basis of the disease, and subsequent investigators have established the non-tuberculous nature of the disease and have tended to confirm the concept of an underlying focus of infection or toxic process as the basis for *lupus erythematosus*. Occasional reports of cases in which lesions developed at the site of trauma have appeared from time to time. It has been suggested that external irritations such as sunlight, vesication with cantharides and bites of insects have been the exciting causes. Many other authors have reported cases following on injury such as tattooing, contact dermatitis and the influence of light, cold and frost. The authors report a case in which there appeared to be two inciting factors, sunburn and *herpes zoster*; the lesions were limited to the site of a previous *herpes zoster*. They state that in this and other cases in which trauma appeared to play a part it appears reasonable to explain the localization of the lesions as follows: (i) an underlying predisposition to the development of *lupus erythematosus* exists as the result of a focus of infection, tissue sensitization due to earlier infections or some other unknown cause, and (ii) there is lowered resistance of those areas which have been subjected to trauma.

Keratoderma Punctatum Syphiliticum.

A. W. KOPF AND J. A. TOLMACH (*Brit. J. Dermat.*, December, 1954) state that discrete, kyperkeratotic, centrally pitted lesions of the palms and soles of syphilitic ætiology are somewhat rare. In addition to syphilis, other dermatoses can produce the identical clinical picture of *keratoderma punctatum*, including *lichen planus*, Darier's disease, porokeratosis of Mibelli, *keratoma periportale* of Gans, *verruca vulgaris*, arsenical keratosis and drug eruptions. In the authors' case the results of serological tests for syphilis and the immune adherence test of Nelson were strongly positive. The lesions responded to penicillin therapy.

Besnier's Prurigo: An Ectodermal Defect.

J. T. INGRAM (*Brit. J. Dermat.*, February, 1955) states that in a fully established case of Besnier's prurigo the whole epidermis is abnormal and thickened, with consequent pallor, and the skin is of a distinctive dirty earthen hue. The pallor may in part be due to the increased vascular tone associated with nervous tension. Portions of the skin may be relatively normal. There is often xeroderma. Pigmentation may involve the thickened skin. Eczema is a mesodermal reaction, whereas Besnier's prurigo is ectodermal. The incidence of juvenile cataract in Besnier's prurigo is between 15% and 25%. The author knows of nothing that can be done to prevent it. In practice the superimposed eczema to which these patients are subject, and the tendency to asthma, hay fever and gastro-intestinal disturbance demand constant attention from the physician. Besnier's prurigo is something apart from eczema, which is responsive to corticotropin. It is difficult to form an opinion whether a baby with infantile eczema will subsequently develop Besnier's prurigo. The diagnosis once established, it must be recognized that the liability persists through life, though periods of complete freedom are common in less severe cases. As regards treatment, climatic adjustments are of great importance. Seasonal variation is well recognized. Excessive sweating from exercise or emotion will often bring on a paroxysm of itching. Corticotropin, cortisone and hydrocortisone ointment have a place in the relief of exacerbations of symptoms and in overcoming habit-formation. The use of local applications, especially tar and podophyllin paste, and of Grenz or X rays, is well recognized. The author condemns the use of antihistamines, both external and internal. The sympathy and the understanding of the physician and the confidence of the patient are all-important.

Perianal Verruca Acuminata with Mucosal Lesions.

B. J. CHESTER AND B. SCHWIMMER (*Arch. Dermat. & Syph.*, February, 1955) state that over a period of five years seven cases of *condylomata acuminata* of the rectal musoca were found in association with perianal *condylomata acuminata*. This condition is not effectively treated by local measures such as the application of podophyllin and becomes a surgical problem. Therefore, in all cases of *condylomata acuminata* of perianal skin the patient should receive the benefit of proctoscopic examination before local therapy is instituted.

Primary Cutaneous Mycosis.

J. SCHWAZ AND G. L. BAUM (*Arch. Dermat. & Syph.*, February, 1955) state that infectious granulomatous diseases follow a certain pattern which permits differentiation of primary and secondary involvement, and the skin is an organ in which the behaviour can very well be studied. Criteria for diagnosis of a primary cutaneous mycosis are as follows: (i) A definite history of trauma with break of the skin and subsequent development of a solitary "chancre" within a few days to three weeks. (ii) Proof or likelihood that the traumatizing agent was contaminated with causative fungus or subsequent contact of the lacerated skin with material containing fungus. (iii) Development of lymphangitis and regional lymphadenitis (chancre *plus* lymphadenitis is the primary complex). (iv) Absence of previous pulmonary mycosis as determined by histological, clinical, serological and X-ray evidence. (v) Change from negative to positive skin reaction and rising serological titre (where applicable). No regional lymph-

angitis and lymphadenitis are found unless secondary infection occurs. Pulmonary disease can be established, but prolonged search with all available methods may be necessary. Deep fungus diseases originate most frequently in the lung with the exception of sporotrichosis, actinomycosis and chromomycosis. Primary skin involvement leads typically to the establishment of a primary complex in North American blastomycosis, coccidioidomycosis, sporotrichosis and possibly South American blastomycosis. Primary infection of the skin in histoplasmosis or torulosis is not well established. Lymph nodes are seldom involved in actinomycosis and chromomycosis, and the criteria applied to the recognition of a primary complex cannot be applied in those diseases. The bona-fide primary mycoses have a uniformly good prognosis.

Contact Dermatitis from Platinum and Related Metals.

C. SHEARD (*Arch. Dermat. & Syph.*, March, 1955) reports a case of contact dermatitis due to platinum and related metals. He states that platinum has been considered incapable of causing dermatitis in the metallic form, though it has caused asthma in the form of more complex salts. Some features of the cleaning and repairing of rings by jewellers are discussed, and the results of patch tests to platinum and related metals are recorded.

UROLOGY.

Radical Perineal Prostatectomy.

H. J. JEWETT (*J.A.M.A.*, November 13, 1954) states that the most prevalent carcinoma in the male arises from the prostate gland and is responsible for 11·8% of all deaths from malignant disease in the United States. Rectal palpation of the prostate still remains the best method of screening male patients over fifty years of age for carcinoma that is small, early, asymptomatic and curable. If this simple procedure was carried out annually by general practitioners, it should result in detection of many patients who are suitable for radical total prostatectomy. Many urologists are reluctant to advise radical prostatectomy for small or early cases of carcinoma because of the advanced age of the patients, the great benefit conferred by anti-androgen therapy, failures with the radical operation and the high incidence of post-operative incontinence of urine. The basic principles involved in any operation designed to eradicate prostatic carcinoma are (i) precise histological diagnosis, (ii) total removal in one intact specimen of the prostate with its fibrous sheath, the bladder neck and the seminal vesicles with their surrounding fasciæ, (iii) complete hæmostasis, and (iv) watertight anastomosis of the bladder to the membranous urethra without tension and without damage to the external urethral sphincter. The author has made a review of all the radical perineal prostatectomies performed at the Johns Hopkins Hospital, Baltimore, in the fifty years between 1904 and 1954. The number of patients was 320. Up to November, 1943, a total of 127 patients had been followed up. When the carcinoma was microscopically confined to the prostate, the ten-year survival rate was 49%, as compared with an expectancy of life of 53% for persons of the same age and sex in the general population. From April, 1943, to April, 1954, a total of 200 operations was performed, with six deaths, or 3% mortality. From January, 1949, to April, 1954, 100 patients, averaging sixty years of age, were operated on. The morbidity was minor and temporary. The average hospital stay was twenty days. Perfect urinary control occurred in a relatively short time in 84% to 95% of the cases, depending on the type of closure used. Compared with the previously quoted figure of 49%, the ten-year survival rate of comparable patients treated palliatively was only 22%.

Calyceal Diverticula.

R. J. BANKER AND W. H. CARD (*J. Urol.*, November, 1954) state that the most widely accepted term for the cyst formation which occasionally occurs in the renal parenchyma as an outpouching from a middle or upper calyx is calyceal diverticulum, though the terms hydrocalyx and pyelogenic cyst have also been used. The exact ætiology of these formations is as yet not sure, though some form of fibrosis in the corresponding infundibulum or in a calyceal neck is the final determining cause. Geographically, the diverticulum is usually connected to the normal calyceal system by a very narrow passage. The usual symptoms associated with these formations are chills, fever, costo-vertebral tenderness, lumbar pain and pyrexia. Symptoms may come on suddenly, without any history of previous attacks. Stones may be present in the cyst or not. Until recently the treatment of this condition has been nephrotomy or "semi-nephrotomy" (renal resection), but the authors consider that a greater effort should be made to save renal parenchyma. In the past few years excision of the diverticulum alone has been successfully tried in a few cases, and the authors now add two cases of their own. The kidney is opened and the cyst excised; then the kidney is closed finally without drainage. In both of the authors' cases, retrograde pyelograms later on showed a normal calyceal architecture, but both patients remained free from symptoms.

Vesico-Rectostomy.

J. G. MOORE (*J. Urol.*, November, 1954) gives follow-up case reports of two patients on whom he performed the new operation of vesico-rectostomy, one five years ago, the other four years ago. The operation is the establishment of a wide fistulous connexion between the bladder floor and the rectum. One was for complete epispadias with urinary incontinence in a man of twenty years, the other for incurable multiple strictures, with fistulæ in the perineum, scrotum and penis, in a man of fifty-six years. The first patient has a normal upper urinary tract as seen in urographic studies, and the second patient, after four years, is so well that his surgeon has been unable to persuade him to undergo laboratory and X-ray studies. The author envisages the following indications for this operation: (i) urinary incontinence when urethral operations are inadequate, and when the anal sphincters are competent; (ii) urethral carcinoma; (iii) some cases of urethral stricture; (iv) exstrophy of the bladder; (v) severe, intractable interstitial cystitis; (vi) the contracted bladder of healed vesical tuberculosis; (vii) wide radical prostatectomy. The author states that this method is not complicated by the very undesirable systemic effects associated with ureterosigmoidostomy, such as hyperchloræmic acidosis. Moreover, there is no reflux into the kidney, nor is there blockage of the upper part of the urinary tract by stenosis below; the intramural portions of the ureters are left undisturbed, for the fistula is made in and about the mid-line.

Endocrine Inhibition and Prostatic Carcinoma.

W. L. VALK AND R. H. OWENS (*J. Urol.*, September, 1954) state that anti-androgen therapy (bilateral orchidectomy *plus* stilbœstrol) gives dramatic results in some 60% of patients suffering from prostatic carcinoma. These patients, however, almost invariably suffer relapse at some later period, and are usually the eventual victims of cancer. The chief stimulus to the growth of carcinoma of the prostate is the activity of androgens. Bilateral adrenalectomy has been used to get rid of this source of extragenital androgens, but needs the use of cortisone afterwards as replacement therapy. With the adrenal glands left intact, however, the excessive or prolonged use of cortisone suppresses adrenal cortical function, and the authors began using this substance in 1951 to try to cut off the adrenal supply of androgen. They state that the great advantage in old and ill patients is that a severe major operation is avoided. At the same time it is important to continue the use of stilbœstrol. Twelve patients with relapsing carcinoma of the prostate were treated with a combination of cortisone and stilbœstrol. All but one had previously had orchidectomy and stilbœstrol therapy at an average time of twenty months earlier. Eight of the twelve patients had an elevated serum acid phosphatase content, and all the patients had bony metastases. The initial cortisone dose was made high in an attempt to inhibit the adrenals functionally, as well as the anterior part of the pituitary. Three hundred milligrammes of cortisone were given daily for two weeks, then 200 milligrammes daily for two more weeks, then 100 milligrammes daily for two weeks, and finally 25 milligrammes daily permanently. The patients were kept on a diet of low salt content, and potassium replacement was at the rate of two to three grammes of potassium chloride per day. An antacid regimen was followed if there was a peptic ulcer history; diuretics were given as needed. Five patients are living still, while seven are dead. The toxic responses to large doses of cortisone are frequent and severe. It appears that about 40% of patients with advanced relapsing carcinoma of the prostate can obtain some benefit from this mode of treatment.

Congress Notes.

AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

THE following information relates to the Ninth Session of the Australasian Medical Congress (British Medical Association) to be held at the University of Sydney from August 20 to 27, 1955.

Programme of Sectional Meetings.

The following is the programme of sectional meetings to be held on Wednesday, Thursday and Friday, August 24, 25 and 26, 1955. There will be four main sessions each day: 9.30 to 11 a.m., 11.30 a.m. to 12.30 p.m., 2 to 3 p.m., 3.15 to 4.15 p.m. The times of presentation of individual papers and symposia, as well as other details, will be shown in the official Congress programme.

The programme of the plenary sessions was published in the issue of July 9, 1955.

Section of Anæsthesia.

Wednesday, August 24:

Presidential address, "Anæsthetics Over Three Decades", Dr. H. J. Daly (New South Wales).

"Cardio-Respiratory Arrest in the Anæsthetized Subject", Dr. P. L. Jobson (New South Wales).

Combined Meeting with Section of Obstetrics and Gynæcology and Section of Pædiatrics, "Resuscitation of the Newborn", Dr. W. D. Cunningham (New South Wales), Dr. June Pash (Victoria), Dr. C. N. Paton (New South Wales).

"Current Problems in Anæsthesia", (*a*) "Clinical Impressions of Chlorpromazine", (*b*) "A Brief Appraisal of the Antagonists to the Barbiturates", Dr. A. S. Paton (New South Wales), (*c*) "A Brief Appraisal of the Antagonists to Morphine", Dr. A. S. Paton (New South Wales).

Thursday, August 25:

"Anæsthetic Practices in America Today", Professor Emery Rovenstine (United States of America).

"A Review of Anæsthesia Overseas", Dr. J. F. McCulloch (New South Wales).

"Spinal Anæsthesia in Cæsarean Section. Occurrence of Respiratory Failure. A Report of Two Cases", Dr. Ruth Molphy (Queensland).

"A Short Review of Hypotension with Special Reference to 'Arfonad'", Dr. S. V. Marshall (New South Wales).

Combined Meeting with Section of Medicine and Experimental Medicine, "Respiratory Problems in the Treatment of Tetanus and Poliomyelitis", Dr. J. G. Richards (New South Wales), Dr. B. E. Dwyer (New South Wales).

Combined Meeting with the Section of Naval, Military and Air Force Medicine and Surgery, "Anæsthesia in the Services": "Anæsthesia in the Royal Australian Navy", Surgeon Lieutenant S. J. Lloyd, R.A.N.

Friday, August 26:

"Anæsthesia in Ophthalmic Surgery", Dr. Jeanne M. Collison (New South Wales); "Anæsthesia in Intestinal Obstruction", Dr. L. T. Shea (New South Wales); "Anæsthesia in Neurosurgery", Dr. S. V. Marshall (New South Wales); "Anæsthesia in Obstetrics", Dr. Janet M. C. Bowen (New South Wales); "Anæsthesia in Cardiac Surgery", Dr. W. R. M. Shaw (New South Wales). Discussion to be opened by Professor Emery Rovenstine (United States of America).

Practical demonstration at Commonwealth Industrial Gases, Limited, 138 Bourke Road, Alexandria.

Section of Dermatology.

Wednesday August 24:

Combined Meeting with Section of Pathology, Bacteriology, Biochemistry and Forensic Medicine, "Mycotic Infections of the Scalp and Mycotic Granulomata": "Mycotic Infections of the Scalp", Dr. H. W. R. Sharp (New South Wales); "Mycology of Mycotic Infections of the Scalp", Dr. Ethel B. Durie (New South Wales); "Mycotic Granulomata", Dr. B. B. Barrack (Queensland); "Sporotrichosis and Chromoblastomycosis", Dr. Margaret Mead (Queensland).

Combined Meeting with Section of Pathology, Bacteriology, Biochemistry and Forensic Medicine, "The Use and Abuse of Antibiotics in Dermatology": "The Use of Antibiotics", Dr. H. MacMillan (Western Australia); "The Abuse of Antibiotics", Dr. J. M. A. O'Donnell (Western Australia); "Antibiotics", Dr. E. F. Thomson (New South Wales).

Thursday, August 25:

"Eczema of the Hands": "Clinical Features of Eczema of the Hands", Dr. N. J. Wilkins (Victoria); "Ætiology of Eczema of the Hands", Dr. W. W. Lempriere (Victoria); "Treatment of Eczema of the Hands", Dr. I. O. Stahle (Victoria).

Presidential address, "Practical Dermatology", Dr. W. C. T. Upton (South Australia).

"Abrasive Treatment of Depressed Scars and Other Cutaneous Blemishes by the Revolving Steel-Wire Brush Technique" (illustrated by film), Dr. J. C. Belisario (New South Wales).

"Pruritus", Dr. J. J. W. Flynn (New South Wales).

Section of History of Medicine.

Thursday, August 25:

Presidential address, "A Remarkable Period in the History of Tasmanian Hospitals", Dr. C. Craig (Tasmania).

"Mrs. Chas. Underwood and the Antidote for the Bites of Snakes and Venomous Reptiles", Dr. W. E. L. Crowther (Tasmania).

"Quaker Physicians and Nonconformity", Dr. K. S. M. Brown (New South Wales).

"The Honourable David Elliot Wilkie, M.D.: A Pioneer of Melbourne", Dr. H. B. Graham (Victoria).

"Nicolaus Copernicus, One of the Leading Medical Officers of the Sixteenth Century", Dr. A. Rytel (United States of America).

Combined Meeting with Section of Naval, Military and Air Force Medicine and Surgery, "The History of Scurvy in the Navy", Dr. E. L. Susman (New South Wales).

"Dr. Edith Pechey, One of the First Women in Medicine", Dr. S. D. Meares (New South Wales).

"Surgery in Sydney in the 1830's", Dr. A. M. McIntosh (New South Wales).

Section of Medicine and Experimental Medicine.

Wednesday, August 24:

Combined Meeting with Section of Surgery, "Chronic Indigestion": Introduction, Dr. I. J. Wood (Victoria); "Peptic Ulcer", Dr. A. W. Morrow (New South Wales); "Gall-Bladder Disease", Dr. K. W. Starr (New South Wales); "Pancreatitis", Professor N. G. Sutton (Queensland); "Psychosomatic Aspects", Dr. R. K. Doig (Victoria).

Combined Meeting with Section of Surgery, "The Modern Treatment of Pulmonary Tuberculosis": Dr. C. H. Fitts (Victoria), Dr. H. D. Sutherland (South Australia).

Combined Meeting with Section of Pædiatrics, Section of Pathology, Bacteriology, Biochemistry and Forensic Medicine and Section of Surgery, "Jaundice": "Liver Function Tests", Dr. Emily M. A. Day (New South Wales); "Liver Biopsy", Dr. V. J. McGovern (New South Wales); "Obstructive Jaundice", Dr. J. B. G. Muir (Tasmania); "Medical Aspects of Jaundice", Dr. W. E. King (Victoria); "Jaundice in the Newborn", Dr. S. E. J. Robertson (New South Wales); "Clinical Research in Jaundiced Patients", Dr. F. F. Rundle (New South Wales).

Thursday, August 25:

Presidential address, "The Physician and His Education", Dr. W. W. S. Johnston (Victoria).

"The Management and Treatment of the Chronic Asthmatic Patient", Dr. R. Steel (New South Wales), Dr. L. A. I. Maxwell (Victoria), Dr. R. H. O. Donald (Victoria).

Combined Meeting with Section of Surgery, "Arterial Grafting for Obliterative Arterial Disease of the Lower Limbs": Dr. A. J. Barnett (Victoria), Dr. K. N. Morris (Victoria).

Combined Meeting with Section of Anæsthesia, "Respiratory Problems in the Treatment of Tetanus and Poliomyelitis" (see Section of Anæsthesia).

Combined Meeting with Section of Obstetrics and Gynæcology, "Heart Disease in Pregnancy": Dr. R. Jeremy (New South Wales), Dr. T. H. Small (New South Wales).

Friday, August 26:

Combined Meeting with Section of Pathology, Bacteriology, Biochemistry and Forensic Medicine, "Modern Concepts in Hæmatology": "The Hæmorrhagic Diseases", Professor H. N. Robson (South Australia); "Immune Mechanisms in Hæmatology", Dr. S. R. Reader (New South Wales); "The Therapy of the Leuchæmias", Dr. I. S. Collins (New South Wales); "The Significance of the Enlarged Spleen", Dr. G. C. de Gruchy (Victoria).

"The Treatment of Nephrosis", Dr. D. G. Duffy (Victoria).

"The Management of Portal Hypertension with Special Reference to Œsophageal Varices", Dr. C. R. B. Blackburn (New South Wales).

"Selection of Patients for Mitral Valvulotomy", Dr. J. K. Maddox (New South Wales).

"The Use of 2:4 Diamino-5-phenyl-thiazole in the Relief of Intractable Pain and Respiratory Depression", Dr. A. Shulman (Victoria).

"The Middle Lobe Syndrome", Dr. M. R. Joseph (New South Wales).

"A Comparison between Phenylbutazone (Butazolidin) and Cortisone", Dr. M. Kelly (Victoria).

Section of Naval, Military and Air Force Medicine and Surgery.

Thursday, August 25:

Presidential address, "Casualty Air Evacuation: Its Evolution and Present-Day Application", Air Vice-Marshal E. A. Daley (Victoria).

An address by Dr. Louis H. Bauer (United States of America).

Combined Meeting with Section of Oto-Rhino-Laryngology, "Otitic Barotrauma": Dr. F. S. Parle (Victoria), Dr. F. F. Ellis (New South Wales).

Combined Meeting with Section of History of Medicine, "The History of Scurvy in the Navy" (see Section of History of Medicine).

Combined Meeting with Section of Anæsthesia (see Section of Anæsthesia).

Friday, August 26:

Demonstration of an R.A.A.M.C. exercise, Major-General W. D. Refshauge (Victoria); "Some Medical Problems of Atomic Warfare", Major-General W. D. Refshauge (Victoria); "Dermatological Problems in Service Personnel", Wing-Commander B. Colahan (Victoria).

"Medical Problems in Diving", Surgeon-Commander J. H. Mitchell, R.N.

"Medical Experiences in a Commando Unit in Malaya", Surgeon-Lieutenant-Commander W. B. Willder, R.N.

"Some Physiological Reactions of Air Crew during and after Prolonged Flights at High Altitudes", Squadron-Leader W. L. Rait (Victoria).

"Tests of Colour Perception", Dr. J. C. Lane (Victoria).

"The Control of Venereal Disease in the Occupational Forces, Japan, 1946-1948", Dr. R. J. M. Dunlop (New South Wales).

"Carriage of Invalids on International Air Services", Dr. E. H. Anderson (New South Wales).

"Collection and Evacuation of Wounded and Air-Sea Rescue of Pilots in Korea", Dr. N. M. Kater (New South Wales).

Saturday, August 27:

Demonstration, Mascot Aerodrome: "Modern Aircraft Control Procedure."

Section of Neurology and Psychiatry.

Wednesday, August 24:

Combined Meeting with Section of Rehabilitation and Physical Medicine, "Psychiatric Aspects of Rehabilitation": Dr. A. Stoller (Victoria), Dr. R. F. May (Victoria).

Combined Meeting with Section of Oto-Rhino-Laryngology, "Auditory Hallucinations from Neuropsychiatric and Otological Points of View": Dr. O. Schmalzbach (New South Wales), Dr. G. R. Halloran (New South Wales).

"Paranoid States": "Clinical Pictures", Dr. B. Peterson (New South Wales); "National and Social Aspects", Dr. I. A. Listwan (New South Wales); "Management", Dr. A. T. Edwards (New South Wales).

Combined Meeting with Section of Obstetrics and Gynæcology, "Problems of Marriage": Dr. Lorna Lloyd-Green (Victoria), Dr. J. H. Hurt (Victoria).

Thursday, August 25:

Presidential address, "The Psychiatrist and His Limitations", Dr. A. Sinclair (Victoria); "Expressive Painting under Hypnosis", Dr. A. D. Meares (Victoria).

"Neuroanatomical Basis of Mental Disorders", Dr. W. R. Adey (Victoria).

"Parietal Lobe Syndrome", Dr. G. Selby (New South Wales).

"Neuropsychiatric Aspects of Arterial Disease": "Neurological Aspects", Dr. L. B. Cox (Victoria); "Neuropathological Aspects", Dr. R. M. Anderson (Victoria); "Electroencephalographic Aspects", Dr. A. Conomy (New South Wales); "Modern Management of Acute Hemiplegia", Dr. G. R. Vanderfield (New South Wales).

Friday, August 26:

Combined Meeting with Section of Pædiatrics, "Stress in Childhood": Professor D. R. MacCalman (United Kingdom), Dr. F. W. A. Clements (New South Wales).

"Problems of Adolescence", Dr. Irene Sebire (New South Wales), Dr. E. C. Dax (Victoria).

"Short-Term Methods of Psychotherapy", Dr. G. B. V. Murphy (Queensland).

"Psychotherapy in General Practice", Dr. M. G. Jansen (South Australia).

"Semantics in Psychiatry", Dr. D. N. Everingham (New South Wales).

"The Surgery of Intractable Pain: Cordotomy versus Leucotomy", Dr. J. L. Dowling (New South Wales).

Section of Obstetrics and Gynæcology.

Wednesday, August 24:

Combined Meeting with Section of Pædiatrics and Section of Ophthalmology: "Routine Care of the Puerperium and Newborn", Dr. R. D. Sheumack (New South Wales); "Management of the Newborn Infant", Dr. Clair Isbister (New South Wales); "Care of the Eyes in the Newborn", Dr. R. Hertzberg (New South Wales).

Combined Meeting with Section of Pædiatrics and Section of Anæsthesia, "Resuscitation of the Newborn" (see Section of Anæsthesia).

Presidential address, "Normal Childbirth", Dr. G. Simpson (Victoria).

"The Indications for Cæsarean Section", Dr. S. D. Meares (New South Wales).

Combined Meeting with Section of Neurology and Psychiatry, "Problems of Marriage" (see Section of Neurology and Psychiatry).

Thursday, August 25:

"Obstetrics and Obstetricians Overseas", Professor B. T. Mayes (New South Wales).

"Preeclamptic Toxæmia", Dr. T. D. Hughes (New South Wales).

"Ætiological Factors in Premature Labour", Professor G. S. Adam (Queensland).

"The Impact of 'Pitocin' Drip on Modern Obstetric Practice", Professor H. M. Carey (New Zealand).

"Uterine Inertia", Professor T. N. A. Jeffcoate (United Kingdom).

Combined Meeting with Section of Medicine and Experimental Medicine, "Heart Disease in Pregnancy" (see Section of Medicine and Experimental Medicine).

Friday, August 26:

"Progress in Gynæcology", Dr. J. N. Chesterman (New South Wales).

"Uterine Bleeding", Dr. G. G. L. Stening (New South Wales).

"Vaginal Discharges", Dr. A. A. Moon (New South Wales).

"The Diagnosis of Salpingitis", Dr. K. S. Richardson (New South Wales).

"Culdoscopy", Dr. A. M. B. Grant (New South Wales).

"Vaginal Hysterectomy in the Treatment of Prolapse", Dr. J. C. Loxton (New South Wales).

"Early Diagnosis of Uterine Cancer", Dr. C. G. Crawford (New South Wales).

"Evaluation of Serial Biopsies in the Treatment of Carcinoma of the Cervix following Irradiation", Dr. K. A. McGarrity (New South Wales) with Dr. J. M. Garvan (New South Wales).

Section of Ophthalmology.

Wednesday, August 24:

Combined Meeting with Section of Obstetrics and Gynæcology and Section of Pædiatrics (see Section of Obstetrics and Gynæcology).

Thursday, August 25:

Presidential address, Dr. A. E. F. Chaffer (New South Wales).

"The Early Diagnosis of Squint", Dr. F. J. A. Pockley (New South Wales).

"Glaucoma: Its Modern Concept", Dr. K. B. Armstrong (New South Wales).

"Contact Lenses", Dr. W. Deane-Butcher (New South Wales).

Friday, August 26:

"The Common Ocular Complications of the Acute Exanthemata of Childhood and Their Treatment", Dr. W. B. Williams (New South Wales).

"Cortisone in Ophthalmology", Dr. P. H. Merory (New South Wales).

"The Red Eye", Dr. R. L. Cahill (New South Wales).

"Eye Injuries in Industry: Their Management and Prevention", Dr. J. W. L. Price (New South Wales).

Section of Orthopædics.

Wednesday, August 24:

Presidential address, Dr. E. F. West (South Australia).

"Relief of Pain in Osteoarthritis": "Denervation of the Joint in Osteoarthritis", Dr. O. W. Leitch (South Australia); "Medical Aspects of Osteoarthritis of the Hip", Dr. M. Kelly (Victoria); "Surgical Aspects of Relief of Pain in Osteoarthritis", Dr. J. W. Van R. Hoets (New South Wales).

Combined Meeting with Section of Public Health and Industrial Medicine, "Low Back Pain": "Backache", Dr. R. D. McK. Hall (Western Australia); "Low Back Pain", Dr. W. A. Hugh Smith (New South Wales).

Combined Meeting with Section of Radiology and Radiotherapy, "Ankylosing Spondylitis": "Clinical Features and Orthopædic Treatment of Ankylosing Spondylitis", Dr. K. R. Daymond (New South Wales); "Radiotherapy in Ankylosing Spondylitis", Professor B. W. Windeyer (United Kingdom).

Thursday, August 25:

Combined Meeting with Section of Surgery, "The Management of Severe Surgical Trauma": Introduction, Dr. J. R. Barbour (South Australia); "Neurosurgical Aspects", Dr. I. D. Miller (New South Wales); "Plastic Surgery", Dr. A. R. Wakefield (Victoria).

"Sudeck's Atrophy", Dr. A. F. Dwyer (New South Wales).

"The Use and Abuse of Plaster Casts", Dr. H. C. Barry (New South Wales).

"Fractures Around the Elbow", Dr. B. T. Keon-Cohen (Victoria).

"Fractures of the Os Calcis", Dr. F. H. M. Callow (New South Wales).

Friday, August 26:

"Clinical Features of Cervical Spondylosis", Dr. W. J. Burke (New South Wales), Dr. G. Selby (New South Wales).

"Neurosurgical Aspects of Brachial Pain", Dr. G. N. Arthurs (New South Wales).

Section of Oto-Rhino-Laryngology.

Wednesday, August 24:

Presidential address, "Common Chronic Disorders of the Nasal Mucous Membrane", Dr. A. K. Green (Queensland).

Combined Meeting with Section of Neurology and Psychiatry, "Auditory Hallucinations from Neuropsychiatric and Otological Points of View" (see Section of Neurology and Psychiatry).

Thursday, August 25:

"Traumatic Neuritis of Trigeminal and Cervical Nerves", Dr. A. W. Farmer (Western Australia).

Combined Meeting with Section of Naval, Military and Air Force Medicine and Surgery, "Otitic Barotrauma" (see Section of Naval, Military and Air Force Medicine and Surgery).

"Carcinoma Involving Middle Ear Space", Dr. G. C. Halliday (New South Wales) with Dr. T. H. O'Donnell (New South Wales).

"The Deafness Problem in Children", Dr. R. C. Willis (Victoria).

Friday, August 26:

Combined Meeting with Section of Radiology and Radiotherapy, "Carcinoma of the Larynx and Pharynx": Sir Stanford Cade (United Kingdom), Professor B. W. Windeyer (United Kingdom).

"The Costen Syndrome in Otology", Dr. F. F. Ellis (New South Wales), H. F. P. Chin, B.D.S., D.M.D. (New South Wales).

"Some Observations on Secretory Otitis Media", Dr. E. J. Egan (New South Wales).

"Diagnosis and Management of External Otitis", Dr. C. Pyman (Victoria).

Section of Pædiatrics.

Wednesday, August 24:

Combined Meeting with Section of Obstetrics and Gynæcology and Section of Ophthalmology (see Section of Obstetrics and Gynæcology).

Combined Meeting with Section of Anæsthesia and Section of Obstetrics and Gynæcology, "Resuscitation of the Newborn" (see Section of Anæsthesia).

Combined Meeting with Section of Medicine and Experimental Medicine, Section of Pathology, Bacteriology, Biochemistry and Forensic Medicine and Section of Surgery, "Jaundice" (see Section of Medicine and Experimental Medicine).

Thursday, August 25:

Presidential address, "Care of the Newborn", Dr. Kate I. Campbell (Victoria); "Vomiting in Children", Dr. N. M. Newman (Tasmania); "Intestinal Obstruction in the Newborn", Dr. D. L. Dey (New South Wales).

"Clinical Features of the Child Suffering from the Effects of Icterus Gravis Neonatorum", Dr. Claudia Burton-Bradley (New South Wales).

"Electroencephalographic Evaluation of the Brain-Injured Child and its Aid to the Clinician", Dr. E. L. Davis (New South Wales).

Combined Meeting with Section of Surgery, "Burns and Their Management": Dr. F. K. S. Hirschfeld (Queensland), Dr. E. S. Stuckey (New South Wales), Dr. D. Officer Brown (New South Wales).

Combined Meeting with Section of Radiology and Radiotherapy, "Reduction of Intussusception by Means of Barium Enemata", Dr. T. Y. Nelson (New South Wales), Dr. G. R. Silvester (New South Wales).

Friday, August 26:

Combined Meeting with Section of Neurology and Psychiatry, "Stress in Children" (see Section of Neurology and Psychiatry).

"So-Called 'Acidosis Attacks' in Children", Dr. F. Arden (Queensland).

"Visiting in Children's Wards", Dr. J. M. Fulton (New South Wales).

"Epidemiology and Control of Staphylococcal Infection of the Newborn", Phyllis M. Rountree, D.Sc. (New South Wales).

"Medical Responsibility for Dental Health in Children", Dr. N. E. Goldsworthy (New South Wales).

"Reversibility of Kernicterus and its Prevention", Dr. Elizabeth Turner (Victoria).

"The Management of the Rheumatic Child", Dr. B. T. Dowd (New South Wales).

Section of Pathology, Bacteriology, Biochemistry and Forensic Medicine.

Wednesday, August 24:

Combined Meeting with Section of Dermatology, "Mycotic Infections of the Scalp and Mycotic Granulomata" (see Section of Dermatology).

Combined Meeting with Section of Dermatology, "The Use and Abuse of Antibiotics in Dermatology" (see Section of Dermatology).

Combined Meeting with Section of Medicine and Experimental Medicine, Section of Pædiatrics and Section of Surgery, "Jaundice" (see Section of Medicine and Experimental Medicine).

Thursday, August 25:

Presidential address, "Teaching Pathology", Professor F. R. Magarey (New South Wales).

"Pathogenesis of Thrombosis", Dr. V. J. McGovern (New South Wales).

"Preservation of the Plasma Clotting Factors in Stored Blood", Dr. I. S. Collins (New South Wales).

"Arterial Changes Producing Renal Damage", Dr. J. D. Hicks (Victoria).

"Histochemical Observations on the Nature of the Cytoplasmic Contents of the Argentaffin Cells", Dr. A. C. Christie (New South Wales).

"Sarcoid-Like Lesions in Lymph Nodes Draining Carcinomata", Dr. R. E. J. ten Seldam (New South Wales).

"The Significance of Sex Difference in Somatic Cells", Dr. H. F. Bettinger (Victoria).

"The Morphological Study of Various Lesions in Skeletal Muscle", Dr. T. J. Constance (New South Wales).

"Molluscum Pseudo-Carcinomatosum", Dr. A. T. Smith (Victoria).

Friday, August 26:

Combined Meeting with Section of Medicine and Experimental Medicine, "Modern Concepts of Hæmatology" (see Section of Medicine and Experimental Medicine)

"Variants of Poliomyelitis Virus", N. F. Stanley, D.Sc. (New South Wales).

"Virus Multiplication", Professor P. M. de Burgh (New South Wales).

"The In-Vitro Effects of Antibiotics on the Multiplication of Entamœba Histolytica", Dr. T. C. Backhouse (New South Wales).

"Oral Treatment of Pernicious Anæmia", Dr. P. I. Hendry (New South Wales).

"Red Cell Life Span in Carcinomatosis", Dr. G. A. W. Johnston (New South Wales).

"Reactions Associated with Blood Transfusions", Dr. R. J. Walsh (New South Wales).

Section of Public Health and Industrial Medicine.

Combined Meeting with Section of Radiology and Radiotherapy, "Mass Surveys for Pulmonary Tuberculosis": Dr. P. S. Woodruff (South Australia), Dr. A. H. McNaughton (Victoria), Dr. C. Rubinstein (New South Wales).

"Industrial Blood Disorders", Professor H. N. Robson (South Australia).

Combined Meeting with Section of Orthopædics, "Low Back Pain" (see Section of Orthopædics).

"Mental Health Aspects of Public Health", Dr. A. Stoller (Victoria).

Thursday, August 25:

Presidential address, Dr. H. M. L. Murray.

"Patterns of Poliomyelitis Immunity", Professor J. A. R. Miles (New Zealand).

"Observations on the Notified Incidence of Three Viral Infections (Poliomyelitis, Infective Hepatitis and Rubella) in Victoria", Dr. E. F. Mackenzie (Victoria).

"Pulmonary Tuberculosis in Relation to Occupation and Conditions of Employment", Dr. W. C. B. Harvey (New South Wales).

"Medical Supervision of Persons Exposed to Radiation Hazards", Dr. D. O. Shiels (Victoria).

Friday, August 26:

"Modern Trends in Public Health", Dr. D. W. Johnson (Queensland).

"The Protective Efficiency in Children of a New Whooping-Cough Prophylactic, Pertussis Hæmagglutinin Adsorb: Field Results over Three Years", Dr. S. Fisher (Victoria) and Dr. D. W. Rankin (Victoria).

"A New Ætiological Factor in Endemic Goitre in Tasmania", Dr. F. W. A. Clements (New South Wales).

"Pesticides and Their Toxicology", Dr. G. H. McQueen (South Australia).

"The Role of Medical Practice in Heavy Industry in Australian Conditions", Dr. H. O. O. Leggo (New South Wales).

Section of Radiology and Radiotherapy.

Wednesday, August 24:

Combined Meeting with Section of Public Health and Industrial Medicine, "Mass Surveys for Pulmonary Tuberculosis" (see Section of Public Health and Industrial Medicine).

Combined Meeting with Section of Orthopædics, "Ankylosing Spondylitis" (see Section of Orthopædics).

Thursday, August 25:

Presidential address, "Evolution of Radiology in Australia", Dr. B. L. W. Clarke (Queensland).

"Placental Localization and Calcification", Dr. E. A. Booth (New South Wales).

"Radiological Features in Plain X-Ray Films of the Skull", Dr. B. I. C. Cahill (New South Wales).

"Evaluation of Tomography", Dr. A. R. Colwell (New South Wales).

Combined Meeting with Section of Pædiatrics, "Reduction of Intussusception by Means of Barium Enemata" (see Section of Pædiatrics).

Friday, August 26:

Combined Meeting with Section of Oto-Rhino-Laryngology (see Section of Oto-Rhino-Laryngology).

"Reflections on Cutaneous Malignancy in Queensland", Dr. A. G. S. Cooper (Queensland).

"A Review of Literature Available on the Genetic Effects of Atomic Radiation", Dr. Mary C. J. Thornton (Victoria).

"The Use of Compensating Filters in Radiotherapy with Particular Reference to the Treatment of Carcinoma of the Breast", Mr. K. H. Clarke (Victoria).

"The Management of the Chronic Leuchæmias by Radiotherapy and Chemotherapy", Dr. J. Madigan (Victoria).

Section of Rehabilitation and Physical Medicine.

Wednesday, August 24:

Combined Meeting with Section of Neurology and Psychiatry, "Psychiatric Aspects of Rehabilitation" (see Section of Neurology and Psychiatry).

Thursday, August 25: Presidential address, Dr. C. W. Anderson (Western Australia).

"Rehabilitation for the Rheumatic and Arthritic Clinic", Dr. R. I. Meyers (Queensland).

"Ankylosing Spondylitis", Dr. P. J. Benjamin (New South Wales).

"The Use of Mepacrine in Rheumatoid Arthritis", Dr. L. J. A. Parr (New South Wales).

"Rehabilitation of the Tuberculous Patient", Dr. E. Silberstern (Queensland).

Friday, August 26:

"The Systemic Use of Cortisone and Allied Substances", Dr. S. G. Nelson (New South Wales).

"Intrasynovial Hydrocortone Injections", Dr. M. Naomi Wing (New South Wales).

"Ultrasonic Therapy (Theory)", Dr. L. T. Wedlick (Victoria).

"Ultrasonic Therapy (Therapeutic)", Dr. T. W. Burgess (New South Wales).

"Manipulation of the Spine", Dr. W. N. Little (New South Wales).

Films of X-ray examination of spinal movements.

Section of Surgery.

Wednesday, August 24:

Combined Meeting with Section of Medicine and Experimental Medicine, "Chronic Indigestion" (see Section of Medical and Experimental Medicine).

Combined Meeting with Section of Medicine and Experimental Medicine, "The Modern Treatment of Pulmonary Tuberculosis" (see Section of Medicine and Experimental Medicine).

Combined Meeting with Section of Pædiatrics, Section of Pathology, Bacteriology, Biochemistry and Forensic Medicine and Section of Medicine and Experimental Medicine, "Jaundice" (see Section of Medicine and Experimental Medicine).

Thursday, August 25:

Combined Meeting with Section of Orthopædics, "The Management of Severe Surgical Trauma" (see Section of Orthopædics).

Combined Meeting with Section of Medicine and Experimental Medicine, "Arterial Grafting in Obliterative Arterial Disease of the Lower Limbs" (see Section of Medicine and Experimental Medicine).

Combined Meeting with Section of Pædiatrics, "Burns and Their Management" (see Section of Pædiatrics).

"Unsatisfactory Results After Cholecystectomy", Dr. S. H. Lovell (New South Wales).

"Hazards of Cholecystectomy", Dr. J. M. Yeates (New South Wales).

"The Use of Biligrafin Medium in Gall-Bladder Surgery", Dr. J. H. Hood (New South Wales).

Friday, August 26:

Presidential address, "Teaching of Surgery", Dr. A. H. Lendon (South Australia).

"Lumps in the Breast", Dr. A. C. Thomas (New South Wales).

"The New Outlook in the Surgery of Toxic Goitre", Sir Hugh Poate (New South Wales).

"The Aggressive Treatment of Metastasis", Dr. T. E. Wilson (New South Wales).

"Hernia: Repair with Silver Wire Filigree", Dr. L. H. Ball (Victoria).

"Plasma Expanders", Dr. R. J. Walsh (New South Wales).

"Renal Tumours", Dr. A. H. Gee (New South Wales).

"Some Difficulties in the Early Diagnosis of Acute Appendicitis", Dr. T. F. Rose (New South Wales).

Section of Tropical Medicine.

Thursday, August 25:

Presidential address, Professor A. H. Baldwin (New South Wales).

"Sprue in Aborigines", Dr. R. A. Douglas (Queensland).

"Hæmoglobin Values of Pregnant Women in North Queensland", Dr. W. R. Horsfall (Queensland).

"Observations on the Use of the Complement-Fixation Test in Entamœba Histolytica Infections", Dr. G. B. Hall (New South Wales).

"Leptospirosis in North Queensland: An Epidemiological Comparison between the Various Leptospiral Serotypes", Dr. E. H. Derrick (Queensland).

"Tropical Ulcer", Dr. C. M. Deland (South Australia).

"A Clinical Study of Scrub Typhus in North Queensland", Dr. R. L. Doherty (Queensland).

"The Transmission of Filariasis with Special Reference to the Pacific Region", Dr. T. C. Backhouse (New South Wales).

"Films and Slides Demonstrating Some Aspects of Leprosy", Dr. W. S. Davidson (Western Australia).

Friday, August 26:

"The Problems of Malaria in New Guinea", Dr. C. E. M. Gunther (New South Wales).

"Malaria in the Middle Wahgi Valley", Dr. T. E. T. Spencer (New Guinea).

"The Present Status of Malaria Control in the South-West Pacific Area", Dr. R. H. Black (New South Wales).

"Latent Malaria", Dr. N. Lee (New South Wales).

General discussion on "Malaria in the Pacific Region".

"Mass Acculturation in the Subtropics", Dr. H. Shannon (Victoria).

Films of tropical interest.

Congress Dinner.

The Congress Dinner will be held at 7 p.m. for 7.45 p.m. on Wednesday, August 24, 1955, at David Jones, Limited, Elizabeth Street store. Members of Congress may be accompanied by their wives (or partners). The cost of the dinner will be £3 10s. per head. Any member of Congress desirous of being present is requested to notify the Honorary General Secretary, Australasian Medical Congress (British Medical Association), 135 Macquarie Street, Sydney, as soon as possible. The notification should be accompanied by a cheque for the required amount and advice as to whether the member will be accompanied by his wife (or partner). As the number to be present at the dinner is strictly limited, applications will be dealt with in the order in which they are received.

Correspondence.

THE GENETIC PRICE OF RADIATION.

SIR: Your editorial of April 23 on "The Genetic Price of Radiation" was a clear and timely exposition of a threat to mankind which is known to too few. I feel that your readers will be interested to know that an Association has recently been formed which is vitally concerned with questions of this type.

This Association, the Medical Association for the Prevention of War (Victoria), has been formed by a group of medical practitioners in Melbourne who believe that doctors have a special responsibility at this time in view of the drastic effects of modern weapons of war.

As doctors, we have this responsibility because we are best able to estimate the mental and physical suffering caused by war, and because of the respected and influential place we hold in the community. For example, it may well be felt that it is our duty as a profession more fully to inform our national leaders, and the public generally, on the medical implications of the use of weapons of mass destruction.

Our Association exists to enable doctors to fulfil their professional responsibilities in relation to the threat of war. We aim to study how medical science can contribute to the prevention of war. We oppose the use of medical science for any purpose other than the prevention or relief of suffering, and we seek the cooperation of all doctors in all countries in the fight against war and disease.

A similar organization, which was inaugurated in the United Kingdom some years ago, has gained wide support among the medical profession there, and includes among its vice-presidents Lord Boyd-Orr, Professor J. M. Mackintosh, Professor W. C. W. Nixon and Professor L. S. Penrose.

We are confident that our Association will be able to meet a need which has never been more pressing than at the present time. We welcome inquiries from all doctors interested in these vital questions, whether or not they agree with our particular aims as set forth above.

Yours, etc.,

IAN K. BUCKLEY,
Honorary Secretary, M.A.P.W. (Victoria).

Austin Hospital,
Heidelberg, N.22,
Victoria.
May 28, 1955.

THE CLOSING OF TRUDEAU SANATORIUM.

SIR: Everyone associated with the treatment of thoracic disease will regret the closing of the Trudeau Sanatorium, and it is right that Dr. Alan Penington should draw our attention to the fact that the primary reason for closing was an economic one. Everybody also would agree with Dr. Penington's implication that there must still be a need for sanatoria. However, we cannot ignore the steadily diminishing trend in the demand for chest hospital beds. In *The Lancet* of January 22, 1955, a commentary is given by a member of the Scottish Department of Health on the falling of the number of tuberculosis patients awaiting admission to Scottish hospitals from 1997 to 841 between the months of March and September, 1954, whilst there had been no noticeable decrease in either the prevalence of the disease or the number of new notifications. It is stated that ". . . There is evidence that a combination of hospital and home treatment is materially reducing the length of institutional care. There can be no doubt that recent advances in medical treatment, earlier case recognition and improved housing have brought an increasing number of the tuberculous within the range of effective cure without hospitalization." There has also been in the same journal a most interesting correspondence on the respective merits of sanatorium and domiciliary treatment.

Experiences in this State are the same as in Scotland. Two years ago there was a waiting list for beds in the State chest hospitals: today there are 70 vacant beds in spite of no reduction in prevalence of the disease or new notifications.

It seems to me that the time has come for taking stock of the position and reorientating our views as to the future treatment of pulmonary tuberculosis. It seems probable that by the more economical use of the various chest hos-

pitals throughout the country and by a greater use of chest clinic-domiciliary treatment a large number of beds could be made available for other types of illness, particularly other long-term chronic illness, and perhaps mental disease. I would submit, sir, that the time is fast approaching when the treatment of pulmonary tuberculosis should be brought back into general medicine and that patients suffering from this disease should be treated where possible in thoracic disease wings of general hospitals, and that sanatoria should be reserved for the chronic infectious coughers whose segregation from the populace is desirable and those other cases of tuberculosis where long-term bed rest is still deemed to be necessary.

I must emphasize that these are my personal opinions and that they do not necessarily reflect the views of the Tuberculosis Division of this State.

Yours, etc.,
W. J. E. PHILLIPS, M.B., M.R.C.P., M.R.A.C.P.,
Acting Director of Tuberculosis.

Hobart,
Tasmania,
June 3, 1955.

PERFORATION OF THE SMALL BOWEL IN INTESTINAL OBSTRUCTION.

SIR: The cases cited by Mr. Johnson in the journal of April 30, 1955, and commented on by Mr. Gale in his letter in the journal of June 4, 1955, serve to show once again that the treatment of intestinal obstruction with few exceptions is operative. Intestinal decompression, whether by gastric or intestinal suction, is an auxiliary aid only and must never be allowed to replace or delay operation.

These cases show once again that this fundamental axiom of emergency surgery needs constant repetition, and we must thank Mr. Johnson for drawing our attention to this vital point.

Yours, etc.,
T. ROSE.

141 Macquarie Street,
Sydney,
June 3, 1955.

Notice.

THE UROLOGICAL SOCIETY OF AUSTRALASIA.

SIR STANFORD CADE AND PROFESSOR B. W. WINDEYER will lecture on "The Treatment of Newgrowths of the Penis and Testis" at 8.15 p.m. on Wednesday, August 10, 1955, in the Robert H. Todd Assembly Hall, 135 Macquarie Street, Sydney. All medical practitioners are invited to attend.

University Intelligence.

THE UNIVERSITY OF ADELAIDE.

The Shorney Prize.

THE Shorney Prize, established for the purpose of perpetuating the memory of the late Herbert Frank Shorney, M.D., F.R.C.S., Lecturer in Ophthalmology in the University of Adelaide from 1926 to 1933, will be offered for the seventh time in 1956, and will be for work in diseases of the ear, nose and throat.

The relevant clauses of the statute are as follows:

3. A post-graduate prize, to be called The Shorney Prize, of the value of £100, shall be awarded to the candidate who in the opinion of the examiners has made the most substantial contribution to knowledge in the subjects of ophthalmology or of diseases of the ear, nose and throat.

4. The recipient must be a graduate of an Australian university.

5. The material submitted for the prize may be either a thesis or published work in medical or scientific literature.

6. Each candidate must declare that the work described is his own.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED JUNE 25, 1954[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.[2]	Australian Capital Territory.	Australia.[3]
Acute Rheumatism	1	6(5)	8(8)	..	1	..	..	..	16
Amœbiasis	..	..	..	..	2(2)	..	..	..	2
Ancylostomiasis	..	..	1	..	..	..	..	..	1
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	1	..	..	..	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	1(1)	21(20)	12(11)	2	..	..	..	..	36
Diphtheria	3(1)	1	3(3)	1(1)	17(13)	..	..	..	25
Dysentery (Bacillary)	..	2(2)	2(2)	..	..	3	..	..	7
Encephalitis	2(2)	1(1)	..	1	..	..	..	..	4
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	34(16)	91(38)	..	17(8)	2(2)	6	..	..	150
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	..	..	3(1)	..	..	..	..	..	3
Malaria	..	1(1)	..	..	..	..	..	..	1
Meningococcal Infection	3(1)	2(1)	1	..	..	2	..	..	8
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	3	2(1)	..	8(5)	..	1	..	..	14
Puerperal Fever	..	..	..	..	..	1	..	..	1
Rubella	..	18(13)	..	2(1)	2(1)	..	..	..	22
Salmonella Infection	..	..	..	..	..	..	..	..	..
Scarlet Fever	5	24(17)	14(3)	1(1)	2(2)	1	..	..	47
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	2	..	..	83(1)	..	..	..	85
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	40(25)	28(20)	7	8(5)	5(4)	7(4)	..	..	95
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	3	..	1(1)	..	..	..	4
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

[2] Figures not available.

[3] Figures incomplete owing to absence of returns from Northern Territory.

7. The prize shall be offered for competition from time to time as the accumulations of the fund permit.

8. The prize shall be offered at least twelve months before the last day for the receipt of applications.

9. The prize shall not be awarded on any occasion unless in the opinion of the examiners the material submitted is of sufficient merit.

Applications, accompanied by three copies of the evidence which the candidates wish to submit in support, must reach the Registrar, University of Adelaide, not later than July 31, 1956.

Royal Australasian College of Surgeons.

THE EDWARD LUMLEY SURGICAL RESEARCH FELLOWSHIP FUND.

THE Council of the Royal Australasian College of Surgeons announces that the College is to receive, over a period of years, a gift of £25,000 made available from Mr. E. L. Lumley.

Mr. Lumley is an Australian who has resided in London for a number of years. The money is to be used to form "The Edward Lumley Surgical Research Fellowship Fund", and the income from the fund will be used to provide surgical research fellowships for medical graduates who, by their record, have displayed special aptitude for this type of work, but whose financial position is such that they cannot continue to pursue research projects without receiving financial assistance.

The fellowships will be tenable in the United Kingdom, and in making this most generous gift, Mr. Lumley desired to assist medical research workers from Australia and New Zealand, who would not otherwise be able to do so, to pursue their work in approved research laboratories in the United Kingdom.

In making the announcement of the gift, the Royal Australasian College of Surgeons expresses the opinion that Mr. Lumley's generous action will promote the cause of surgical research and bring closer together research workers from Australasia with their colleagues working in similar fields in the United Kingdom.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Week-End Course on Cancer at Lismore.

THE Post-Graduate Committee in Medicine in the University of Sydney announces that, in conjunction with the North Eastern Medical Association, a week-end course on cancer subjects will be held at the Lismore Base Hospital on Saturday and Sunday, July 30 and 31, 1955. The programme is as follows:

Saturday, July 30: 10.15 a.m., "The Diagnosis of Cancer, Part I", Dr. V. J. McGovern; 11 a.m., "The Use of Radio-isotopes in the Treatment of Cancer", Dr. L. Atkinson; 2 p.m., "Cancer of the Cervix Uteri", Dr. George Stening; 3 p.m., "The Diagnosis of Cancer, Part II", Dr. V. J. McGovern; 4.30 p.m., screening of films, "Some Aspects of Accessible Cancer: Part V. Cervix and Uterus" and "Gastro-Intestinal Cancer: Problems of Early Diagnosis".

Sunday, July 31: 9.30 a.m., "Cancer of the Fundus Uteri", Dr. George Stening; 11 a.m., "The Management of Incurable Cancer", Dr. L. Atkinson.

The above course is being held under a grant from the New South Wales Cancer Council, and there will be no attendance fee. Those wishing to attend are requested to communicate as soon as possible with Dr. N. J. Rogers, who is the Honorary Secretary of the North Eastern Medical Association, 24 Conway Street, Lismore. Telephone: Lismore 404 (day), 1765 (night).

Medical Appointments.

Dr. G. H. Van Nooten has been appointed a public vaccinator, Shire of Yarrawonga, Victoria.

Dr. H. A. Retallick has been appointed a public vaccinator, Shire of Flinders, Victoria.

Deaths.

THE following deaths have been announced:

JONES.—Alice Muriel Jones, on June 30, 1955, at Wellington Point, Queensland.

GILL.—Frank Llewellyn Gill, on June 30, 1955, at Perth.

Diary for the Month.

JULY 18.—Victorian Branch, B.M.A.: Finance Subcommittee.
JULY 19.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 20.—Western Australian Branch, B.M.A.: General Meeting.
JULY 21.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 21.—Victorian Branch, B.M.A.: Executive of Branch Council.
JULY 26.—New South Wales Branch, B.M.A.: Ethics Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205 Saint George's Terrace, Perth): Norseman Hospital; all contract practice appointments in Western Australia. All government appointments with the exception of those of the Department of Public Health.

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